Remarks

Claims 48-51 are added herein; as a result, claims 1, 4-7, 9-12, 15-17, 33, 36-37, 40-41, and 46-51 are pending. Claims 9-12, 16-17, 40-41, and 46-47 are withdrawn from consideration.

The new claims are supported throughout the originally filed specification and claims. Claim 48 is supported, e.g., by claim 1, at paragraph 28, lines 17-18; at paragraph 24, line 6; and at paragraph 17, lines 12-13 and 18-19 (paragraph and line numbers are of the published application). Claim 49 is supported, e.g., by claim 1 and at paragraph 28, line 14. Claim 50 is supported, e.g., by claim 1 and at paragraph 17, lines 7-8. Claim 51 is supported, e.g., by claim 1 and at paragraph 28, line 13.

Election/Restrictions

The Examiner's withdrawal of claim 9 from consideration on the basis that it is drawn to an invention independent and distinct from the elected invention of claim 1 is noted. However, the Examiner is reminded that "Should any linking claim be allowed, the restriction requirement must be withdrawn." M.P.E.P. § 809. Genus claims are one type of linking claim. M.P.E.P. § 809.03. And claim 1 is a genus claim relative to claim 9 in that claim 1 encompasses no material elements in addition to those recited in the species of claim 9. M.P.E.P. § 806.04(d). Thus, if claim 1 is found allowable, the restriction requirement under which the Examiner has withdrawn claim 9 and the other species claims encompassed by the genus claim 1 must be withdrawn, and the species claims considered. All of the pending withdrawn claims are species claims encompassed by the genus linking claim 1.

The Rejection of the Claims Under 35 U.S.C. § 102(e) Over Bostwick

Claims 1, 4-7, 33, and 36 were rejected under 35 U.S.C. § 102(e) as being anticipated by Bostwick (U.S. Published Patent Application 2002/0009429 A1, January 29, 1999). This rejection is respectfully traversed.

A Rule 131 Declaration of Applicant Thomas Dag Horn was filed with the previous response to establish an earlier date of invention than the filing date of

Bostwick. The Examiner concedes that Dr. Horn's Declaration "establishes possession of a pharmaceutical composition comprising mumps and candida antigens to treat human patients afflicted with common warts." But the Examiner states that the "declaration must establish possession of either the whole invention claimed or something falling within the claim (such as a species of a claimed genus), in the sense that the claim as a whole reads on it," citing *In re Tanczyn*, 347 F.2d 830, 146 U.S.P.Q. 298 (C.C.P.A. 1965). Thus the Examiner concludes that the Rule 131 Declaration is ineffective to overcome the Bostwick reference.

"Rule 131 requires applicant to make oath to facts showing completion 'of the invention.' That requirement does not mean affiant must show a reduction to practice of every embodiment of the invention." *In re Hostettler*, 356 F.2d 562 (C.C.P.A. 1966). The invention here is the use of an antigen to treat an epithelial tumor, such as warts, by injection into the epithelial tumor, where the antigen induces or is capable of inducing a cutaneous delayed type hypersensitivity (DTH) response. Dr. Horn's Declaration shows possession of that invention before the filing date of Bostwick.

The Examiner concedes that the Declaration shows possession of a pharmaceutical composition containing mumps and candida antigens, but asserts that this showing does not establish possession of the embodiment of a pharmaceutical composition containing a bacterial antigen and a candida antigen. Again, "Rule 131 requires applicant to make oath to facts showing completion 'of the invention.' That requirement does not mean affiant must show a reduction to practice of every embodiment of the invention." *In re Hostettler*, 356 F.2d 562 (C.C.P.A. 1966).

The facts here show some parallels to those of *In re Stryker*, 435 F.2d 1340 (C.C.P.A. 1971). In *Stryker*, the applicant claimed a "process for removing polypropylene diluent from a suspension consisting essentially of from about 50%-60% by weight polypropylene . . ." *Id.* at 1340. The applicant attempted to remove a cited reference with a Rule 131 affidavit. The Board of Patent Appeals and Interferences held that the affidavit was deficient because it did not demonstrate possession of the particular weight percentages recited in the claim. *Id.* at 1341. The C.C.P.A. overturned the rejection. The C.C.P.A. first distinguished *Tanczyn*, the case also cited by the Examiner here, as concerning a situation where "the subject matter shown in [both] the reference

and the affidavit was so different from the claimed invention that the claims were unobvious and patentable over the reference." *Id.* at 1341. The Court in *Stryker* then held "To hold that Harban is not removed by the showing here presented would lead to an anomalous result, i.e., if appellant broadened his claims by deleting the weight limitations so as to read literally on Harban, Harban would not be available as a reference against such broadened claims because appellant's antedating affidavit would be satisfactory in every respect. It cannot be the law that the same affidavit is insufficient to remove the same reference applied against the slightly narrower claims presented here." *Id.* at 1341-1342.

The facts here are even stronger. The Examiner concedes that Dr. Horn's Declaration establishes possession of a pharmaceutical composition comprising a mumps antigen and a candida antigen. The originally filed claim 1, reciting a pharmaceutical composition comprising at least two antigens, read on that embodiment. But the Examiner required that Applicant narrow claim 1 in a restriction requirement to make searching easier. Now the Examiner rejects use of the Declaration to remove Bostwick on the basis that the narrowed claim 1 no longer reads on the embodiment shown by the Declaration. The broader claim that would read on the embodiment shown by Dr. Horn's Declaration is in fact, not just a hypothetical claim but the originally filed claim 1 reciting a pharmaceutical composition comprising at least two antigens. This claim was narrowed to recite a pharmaceutical composition comprising a bacterial antigen and a candida antigen, solely in response to the Examiner's restriction requirement. To paraphrase the court in *Stryker*, it cannot be the law that the Examiner can demand that the claims be narrowed to make searching easier, and then assert that the Applicants' showing of possession with a Rule 131 Declaration, while it would have been sufficient to remove the reference with the original claims, is not sufficient with the narrower claims that the Examiner required in a restriction requirement.

Alternatively, Applicants' showing of a reduction to practice of a pharmaceutical composition comprising a mumps antigen and/or a candida antigen for treating warts establishes possession of a pharmaceutical composition comprising a bacterial antigen and a candida antigen for treating warts, wherein each of said antigens induces or is capable of inducing a cutaneous delayed type hypersensitivity response in a mammalian

subject, because the latter composition is obvious in view of the former. This rule of obviousness in considering Rule 131 Declarations was elucidated in *In re Spiller* (500 F.2d 1170 (C.C.P.A. 1974)). *In re Spiller* is another case of an appeal from a rejection by the Board of an attempt with a Rule 131 Declaration to swear behind a cited reference. As in *Stryker*, the Board rejection was on the basis that the Declaration did not establish possession of all the limitations of the claims, and as in *Stryker* the C.C.P.A. overturned the Board decision. The C.C.P.A. held in *In re Spiller* that "for the purpose of antedating [a reference] under Rule 131, it is sufficient that appellant has shown a reduction to practice of his basic invention, which showing will also suffice as to claims differing therefrom only in details which are obvious to one of ordinary skill in the art." *In re Spiller*, at 1178.

Mumps antigen and candida antigen are both unrelated to the papilloma virus that causes common warts. They have little in common with each other besides the fact that both induce a delayed type hypersensitivity response in many human subjects because a large portion of the population has sensitivity to each. One antigen is viral and the other fungal. From those facts, which were known at the time of the Applicants' invention, it would have been obvious to one of ordinary skill in the art, in view of Applicants' invention of using mumps antigen and candida antigen to treat warts, that any antigen which induces or is capable of inducing a delayed type hypersensitivity response could be used to treat warts.

Applicants' showing of a reduction to practice of a pharmacuetical composition comprising a mumps antigen and/or a candida antigen for treating warts renders obvious and thus establishes possession also of the presently claimed pharmaceutical composition comprising a bacterial antigen and a candida antigen for treating a benign epithelial tumor caused by a papilloma virus (e.g., warts), wherein each of said antigens induces or is capable of inducing a cutaneous delayed type hypersensitivity response in a mammalian subject.

Thus, the Rule 131 Declaration of Dr. Horn establishes possession of the invention before the filing date of Bostwick. Accordingly, Applicants respectfully request withdrawal of the rejection of claims 1, 4-7, and 36 under 35 U.S.C. § 102(e) over Bostwick.

The Rejection of the Claims Under 35 U.S.C. § 102(e) Over Clements

Claims 1, 4-7, 33, and 36-37 were rejected under 35 U.S.C. 102(e) as being anticipated by Clements (U.S. Patent No. 6,033,673). This rejection is respectfully traversed.

The Examiner asserts that "the claims are drawn to the pharmaceutical composition, *per se*. As such, each of the antigens disclosed by Clements inherently induces or is capable of inducing a cutaneous delayed type hypersensitivity response." The Examiner further states, "In the absence of evidence to the contrary, the burden is on the applicant to prove that the claimed product is different from those taught by the prior art and to establish patentable differences," citing *In re Best,* 562 F.2d 1252 (C.C.P.A. 1977) and *Ex parte Gray,* 10 U.S.P.Q.2d 1922 (Bd. Pat. App. Int. 1989).

Clements discloses a novel mutant of *E. coli* heat labile enterotoxin modified by two amino acid substitutions and designated LT(R192G/L211A) (abstract). It discloses that the mutant enterotoxin can be administered in conjunction with any biologically relevant antigen or vaccine, such that an increased immune response to the antigen or vaccine is achieved (col. 9, lines 36-41). It discloses that the mutant enterotoxin and antigen can be administered simultaneously in a pharmaceutical composition (col. 9, lines 43-45). It discloses that many antigens may be used in the invention, including antigens from pathogenic fungi, and specifically including *Candida albicans* (col. 10, lines 27-29). It discloses that the mutant enterotoxin promotes the production of serum and/or mucosal antibodies as well as cell-mediated immune responses against antigens that are simultaneously administered with the mutant enterotoxin (col. 9, lines 6-10). It refers to the mutant enterotoxin as an adjuvant (abstract).

Requirements for Rejection Based on Inherency: Burden of Proof

The Examiner merely asserts without evidence and without providing any reasoning that the *E. coli* heat-labile enterotoxin mutant LT(R192G/L211A) is an antigen and induces a cutaneous DTH response, and that therefore the composition of the mutant enterotoxin and a candida antigen suggested in Clements anticipates the present claims. The Examiner then states that the burden is on the Applicant to prove this is not the case.

That is not the law. The Examiner uses the word "inherently," effectively conceding that this rejection is based on a theory of inherency. To rely on a theory of inherency to support a 35 U.S.C. § 102 rejection, the M.P.E.P. states that "the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." M.P.E.P. § 2112, citing *Ex party Levy*, 17 U.S.P.Q.2d 1461, 1464 (Bd. pat App. & Inter. 1990) (emphasis in the original). "[T]hat a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic." M.P.E.P. 2112, citing *In re Rijckaert*, 9 F3d 1531, 1534 (Fed. Cir. 1993) (emphasis in the original). Yet the present rejection is apparently based on a contention that the Clements mutant enterotoxin may be an antigen and may be capable of inducing a cutaneous DTH response. The Examiner states that the burden is on the Applicants to prove otherwise.

Both *In re Best* and *Ex parte Gray*, the two cases cited by the Examiner, concern claims that were functionally product-by-process claims and were evaluated under a product-by-process standard. Claim 1 in Best recited a crystalline zeolitic aluminosilicate having certain properties. *In re Best,* 562 F.2d at 1252. Claim 3 recited a process for preparing the product recited in claim 1. *In re Best,* 562 F.2d at 1253. The court cited a reference wherein

> [a]ll the positive process limitations are expressly disclosed except for the functionally expressed rate of cooling. However, there is nothing to indicate that this rate of cooling in any way differs from the normal rate resulting from removal of the heat source. Thus, the examiner's conclusion that those parameters of the resultant product which are recited in the appealed claims but are not expressly disclosed in the reference would be inherent is a reasonable one, absent convincing evidence to the contrary. *In re Best*, at 1254.

Ex parte Gray also involved claims evaluated as product-by-process claims. "While the present claims are drafted in the form of a compound or a composition, the rationale underlying appellants' arguments is founded on the proposition that the claims are directed to a product-by-process. In any event, we are convinced that the legal philosophy employed in rejections involving products-by-process should be employed with respect to the claims before us. *Ex parte Gray*, 10 U.S.P.Q.2d at 1924.

The burden of proof for the Patent Office in making out a rejection for anticipation or obviousness of product-by-process claims is lower, according to the M.P.E.P. "The Patent Office bears a lesser burden of proof in making out a case of *prima facie* obviousness for product-by-process claims because of their peculiar nature." M.P.E.P. § 2113, quoting *In re Fessmann*, 489 F.2d 742, 744, 180 U.S.P.Q. 324, 326 (C.C.P.A. 1974).

Product-by-process claims are directed, typically, to a product that is nearly identical to a prior art product known to the inventors, differing only in the manner the product is produced. The differing method of production is alleged to create different properties in the product. Both *In re Best* and *Ex parte Gray* concerned products that were nearly identical to prior art products known to the inventors, but were prepared by a new process. *Ex parte Gray* concerned claims directed to human β nerve growth factor produced by recombinant means. *Ex parte Gray*, 10 U.S.P.Q.2d at 1923. The protein was already known, and the issue was whether producing the protein by recombinant means created a patentably distinct product. *In re Best* concerned a zeolitic aluminosilicate useful as a catalyst. *In re Best*, 562 F.2d at 1252. Similar zeolitic aluminosilicates useful as catalysts were already known. *Id.* at 1253. The claimed catalyst differed from the prior art catalysts only in the rate of cooling used to produce it. *Id.* at 1254. Where the only difference between a claimed product and a prior art product is the way it is produced, the board in *Ex parte Gray* and the court in *In re Best* have held that it is appropriate to shift the burden to the Applicant to demonstrate that the different method of production creates a patentable difference in the product.

However, the present claims are not product-by-process claims. So the lesser product-by-process standard is not appropriate. The appropriate standard is the standard for inherency rejections, as described above.

Again, to substantiate a rejection on the basis of inherency, "the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teaching of the applied prior art." M.P.E.P. § 2112, citing *Ex party Levy*, 17 U.S.P.Q.2d 1461, 1464 (Bd. pat App. & Inter. 1990) (emphasis in the original).

The Examiner has failed to meet his burden for a 35 U.S.C. § 102 inherency rejection.

The Examiner has failed to meet the burden of providing a basis in fact and/or technical reasoning that the allegedly inherent characteristic, namely that the mutant enterotoxin of Clements is an antigen that induces or is capable of inducing a cutaneous delayed type hypersensitivity response in the pharmaceutical compositions disclosed in Clements, necessarily flows from the teaching of Clements. The Examiner has provided no evidence or rationale for the conclusion that the mutant enterotoxin of Clements is an antigen and is capable of inducing a cutaneous DTH response in the pharmaceutical compositions of Clements.

The present claims recite a pharmaceutical composition comprising a bacterial antigen and a candida antigen, wherein each of said antigens induces or is capable of inducing a cutaneous delayed type hypersensitivity response in a mammalian subject. Clements discloses that administered with an antigen LT(R192G/L211A) (the mutant enterotoxin) may promote a cell-mediated immune response against the antigen (col. 9, lines 6-10; col. 13, line 62-col. 14, line 9). Promoting an immune response against an antigen means that the enterotoxin is functioning as an adjuvant, which is how Clements refers to the mutant enterotoxin (abstract), not as an antigen. The claims require that the pharmaceutical composition include a bacterial antigen that induces or is capable of inducing a cutaneous DTH response in a mammalian subject. An antigen is "[a]ny substance that, as a result of coming in contact with appropriate cells, induces a state of sensitivity and/or immune responsiveness after a latent period (days to weeks) and that reacts in a demonstrable way with antibodies and/or immune cells of the sensitized subject in vivo or in vitro." (Stedman's Medical Dictionary, 27th ed.) Thus, the bacterial antigen (like the candida antigen) in the composition must induce or be capable of inducing a cutaneous DTH response against itself. That is what it means to be an antigen. Nothing in Clements indicates that the mutant enterotoxin induces any immune response against itself, much less a cutaneous DTH immune response against itself.

Applicants agree with the Examiner's characterization of the claims that they require that each of the antigens be capable of inducing a DTH response when they are present together in the pharmaceutical composition.

Even if the mutant enterotoxin of Clements were to be inherently an antigen, nothing in Clements indicates that it also induces or is capable of inducing a cutaneous DTH response, particularly in the pharmaceutical compositions of Clements, as is recited in the claims.

Not all antigens induce a DTH response, particularly not in all compositions. There are two broad classes of immune response: humoral and cell-mediated. (Alberts, B. et al., *Molecular Biology of the Cell*, 1983, p. 952.) Humoral immunity involves production of soluble antibodies that circulate in the blood stream and bind to antigens. (*Id.*, p. 952). Cell-mediated immunity involves the production of T cells that recognize and bind to antigen on the T cell surface (*Id.*, p. 952), and delayed type hypersensitivity response is one type of cell-mediated immune response (Janeway, C.E. et al., *Immunobiology: The Immune System in Health and Disease*, 3rd Ed., 1997, Current Biology, Ltd., New York p. 11:20).

Hypersensitivity reactions are a class of immune responses that cause tissue injury. (Janeway et al., p. 11:2.) Hypersensitivity reactions come in four types – types I-IV. (*Id.*, Figure 11.2.) A type I response is based on IgE antibody and T_H2 cells (a type of T cell). (*Id.*, Fig. 11.2.) Type II and III responses involve IgG antibody. (*Id.*, Fig. 11.2.) Type IV responses are based on T cells. (*Id.*, Fig. 11.2.) The type IV response is also known as the delayed type hypersensitivity response. (*Id.*, p. 11:20-11:21.)

"Allergy is usually equated with a type I, or immediate-type hypersensitivity reactions." (*Id.*, p. 11:2.) "There are certain antigens and routes of antigen presentation to the immune system that favor the production of IgE." (*Id.*, p. 11:3.) Characteristics of antigens that induce a IgE response are listed in Fig. 11.3 of Janeway et al. (*Id.*) Thus, some antigens and routes of antigen presentation produce IgE, which leads to the Type I response, and not a type IV delayed type hypersensitivity response. (*Id.*, Fig. 11.2.) Particular antigens that induce a type IV or delayed type hypersensitivity response are listed in Janeway et al. at pages 11:20-11:21 and include poison ivy and tuberculin. (*Id.*) The description of the different types of hypersensitivity reactions and characteristics of the antigens that produce the different types of hypersensitivity reactions in Janeway et al. shows that some antigens and compositions containing antigens produce type I, II, or III hypersensitivity responses and not a type IV delayed type hypersensitivity response.

Thus, some antigens, particularly when administered in some compositions (*i.e.*, at a particular concentration and in the presence of the specific components of the composition), do not induce a cutaneous delayed type hypersensitivity response.

This is explicitly stated in Nieuwenhuis at page 27: "A major question still remains as to the factors involved in determining whether cellular [e.g., a DTH response] or humoral immunity will develop in response to a certain antigen." (Neiwenhuis, P., pp. 3-32, in Marsh, J.A. et al. eds., *The Physiology of Immunity*, CRC Press, Boca Raton, FL, 1996.)

Thus, again, not all antigens in all compositions induce a cellular or DTH immune response.

Clements discloses compositions containing a mutant enterotoxin and an antigen, and that administration of these compositions induces an immune response to the antigen (col. 9, lines 36-41). Clements does not disclose that any immune response directed to the mutant enterotoxin is generated. Much less does it disclose that specifically a cutaneous DTH response to the mutant enteroxin is generated. Since not all antigens in all compositions induce a DTH response, and Clements does not disclose that any DTH response to the mutant enterotoxin of its compositions is generated, it is therefore not a necessarily inherent characteristic of the compositions disclosed in Clements that the mutant enterotoxin administered in those compositions induces or is capable of inducing a cutaneous DTH response against itself. Thus, Clements does not disclose a composition containing a candida antigen and a bacterial antigen, each of which induces or is capable of inducing a cutaneous delayed type hypersensitivity response in a mammalian subject.

Dependent claims

Even if the mutant enteroxin of Clements were inherently an antigen that is capable of inducing a cutaneous DTH response in the compositions disclosed therein, claims 48-51 are still novel over Clements.

Clements discloses a new mutant *E. coli* enterotoxin molecule (column 6, lines 21-28). Since it is a new engineered molecule generated by site-directed mutagenesis (column 12, lines 59-61), no human or other mammal has been exposed to it and no

human or other mammal would be expected to have a preexisting sensitivity to it. Thus, claims 48-49, reciting that humans have a preexisting sensitivity to each of the antigens such that each of the antigens, when injected intradermally into a human subject, induces a cutaneous delayed type hypersensitivity response in at least some human subjects (claim 48) or in most healthy human subjects (claim 49) are novel over Clements.

Claim 50 recites the pharmaceutical composition of claim 1 wherein each of said antigens has a high prevalence of reactivity in humans or another mammal to induce a cutaneous delayed type hypersensitivity response. Again, since the enterotoxin adjuvant of Clements is a novel engineered molecule, it is not likely that humans or other mammals have a high prevalence of reactivity to it. Furthermore, no evidence has been introduced that even wild type *E. coli* enterotoxin has a high prevalence of reactivity in humans or another mammal to induce a cutaneous delayed type hypersensitivity response. Thus, claim 50 also is novel over Clements.

Claim 51 recites the pharmaceutical composition of claim 1 wherein each of said antigens is an antigen from a naturally occurring infectious agent. The enterotoxin of Clements is a new engineered molecule generated by site-directed mutagenesis (column 12, lines 59-61). Thus, it is not an antigen from a naturally occurring infectious agent.

In view of the remarks herein, Applicants respectfully request withdrawal of the rejection of claims 1, 4-7, and 36 under 35 U.S.C. § 102(e) over Clements.

The Rejection of the Claims Under 35 U.S.C. § 103(a)

Claims 1, 4-7, 15, 33, and 36-37 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Bostwick (US 2002/0009429) or Clements (U.S. Patent No. 6,033,673) in view of the CANDIN package insert text. This rejection is respectfully traversed.

Bostwick is removed as prior art by the Rule 131 Declaration of Dr. Horn, as discussed above.

Three criteria must be met in order to establish a *prima facie* case of obviousness. First, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Second, there must be some suggestion or motivation in the references or in the knowledge generally available to one of ordinary skill in the art to modify the reference or combine reference teachings to arrive at the claimed invention. Third, there

must be a reasonable expectation of success. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. M.P.E.P. § 2142.

The present claims recite a pharmaceutical composition comprising at least two antigens, wherein (1) each of the antigens induces or is capable of inducing a cutaneous delayed-type hypersensitivity response in a mammalian subject; (2) the composition is capable of treating a benign epithelial tumor caused by a papilloma virus in a mammalian subject; and (3) one of the two antigens is a bacterial antigen and the other is a candida antigen.

Clements discloses a novel mutant of *E. coli* heat labile enterotoxin modified by two amino acid substitutions and designated LT(R192G/L211A) (abstract). It discloses that the mutant enterotoxin can be administered in conjunction with any biologically relevant antigen or vaccine, such that an increased immune response to the antigen or vaccine is achieved (col. 9, lines 36-41). It discloses that the mutant enterotoxin and antigen can be administered simultaneously in a pharmaceutical composition (col. 9, lines 43-45). It discloses that many antigens may be used in the invention, including antigens from pathogenic fungi, and specifically including *Candida albicans* (col. 10, lines 27-29). It discloses that the mutant enterotoxin promotes the production of serum and/or mucosal antibodies as well as cell-mediated immune responses against antigens that are simultaneously administered with the mutant enterotoxin (col. 9, lines 6-10). It refers to the mutant enterotoxin as an adjuvant (abstract).

As is discussed above, Clements does not disclose that LT(R192G/L211A) in the compositions induces or is capable of inducing any cell-mediated response (against itself), or specifically a cutaneous delayed type hypersensitivity response, as recited in the present claims. Clements does not even disclose that LT(R192G/L211A) is an antigen itself. Clements only discloses that administered with an antigen LT(R192G/L211A) may promote a cell-mediated immune response against the antigen (col. 9, lines 6-10; col. 13, line 62-col. 14, line 9). Nor does Clements suggest that LT(R192G/L211A) would induce or be capable of inducing a cutaneous DTH response against itself, or that it would be desirable if it did.

Clements also does not disclose or suggest that a composition containing LT(R192G/L211A) and a candida antigen, or any other composition, would be capable of treating a benign epithelial tumor caused by a papilloma virus.

The CANDIN package insert does nothing to remedy these deficiencies.

Clements does not disclose or suggest a composition containing two antigens where each antigen induces or is capable of inducing a cutaneous delayed-type hypersensitivity response in a mammalian subject. Clements also does not disclose or suggest that its compositions (or any compositions) are capable of treating a benign epithelial tumor in a mammal. Thus, Clements does not teach or suggest all the claim elements.

Clements also does not provide any suggestion or motivation to modify its teachings to arrive at a composition containing at least two antigens that induce or are capable of inducing a delayed-type hypersensitivity reaction in a mammalian subject, wherein the composition is capable of treating a benign epithelial tumor caused by a papilloma virus in a mammalian subject, and wherein one of the two antigens is a bacterial antigen and the other is a candida antigen.

The CANDIN package insert does nothing to remedy these deficiencies of Clements.

Accordingly, the cited references fail to satisfy at least two of the three requirements for a *prima facie* case of obviousness. Thus, it is respectfully requested that the Examiner withdraw the rejection of claims 1-9, 13-15, and 33-39 under 35 U.S.C. § 103(a) over Bostwick (US 2002/0009429) or Clements (U.S. Patent No. 6,033,673) in view of the CANDIN package insert text.

Conclusion

Applicant respectfully submits that the claims are in condition for allowance, and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney (651-207-8270) to facilitate prosecution of this application.

Respectfully submitted,

THOMAS DAG HORN ET AL

By Their Representatives,

McTavish Patent Firm
429 Birchwood Courts
Birchwood, MN 55110
651-207-8270

Date March 4, 2005 By: Hugh McTavish

Hugh McTavish
Reg. No. 48,341

CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient first class postage, in an envelope addressed to: Mail Stop RCE, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 5 day of March, 2005.

Hugh McTavish

Hugh McTavish

Time has not shown any evidence of actual confusion. However, evidence of actual confusion is not necessary for establishing a claim of likelihood of confusion. *Miles Shoes, Inc. v. R.H. Macy & Co., Inc.*, 199 F.2d 602, 603 [95 USPQ 170, 171-72] (2d Cir. 1952), *cert. denied*, 345 U.S. 909 [96 USPQ 457] (1953); *La Touraine Coffee Co. v. Lorraine Coffee Co.*, 157 F.2d 115, 117 [70 USPQ 429, 431-32] (2d Cir. 1946), *cert. denied*, 329 U.S. 771 [71 USPQ 328] (1946). Moreover, in light of the circumstances of this injunction, this is not fatal to Time's claim of trade dress infringement. Globe has published only one issue of *Celebrity* which was on the stands for only a short period of time before Time brought this action. Given the prior findings of likelihood of confusion, it is understandable that Time would not have been able to gather such information as of the start of this action.

[4] For the reasons set forth above, Time has established a trade dress in the *People* cover format, the similarity of the *Celebrity* cover format, and that Globe's intentional imitation of *People*'s cover format in an effort to capitalize on their reputation and advertising. Further, the magazines are very close in competitive proximity, and the buying habits of consumers lead to a conclusion that there is a likelihood of confusion as to the source of publication of *Celebrity* magazine. Each of these factors weigh in Time's favor. It is fair to conclude therefore, that there is a likelihood that the public will be confused and that Time has proven its cause of action for the infringement of its trade dress.

Irreparable Injury

[5] As indicated earlier to obtain a preliminary injunction, Time must establish that *Celebrity*'s use of its cover format will cause irreparable injury. Where a party seeks a preliminary injunction in a trademark infringement case, irreparable harm is demonstrated by a showing of likelihood of confusion as to the source or sponsorship of the magazine. *Home Box Office v. Showtime/The Movie Channel*, 832 F.2d 1311, at 1314 [4 USPQ2d 1789, 1791]. Here Time has shown a likelihood of confusion sufficient to meet the showing of irreparable harm.

Balance of the Hardships

Globe has printed 125,000 copies of the 1989 issue, approximately half of their regular level of production. However, they have only published one issue with the new cover and there are numerous other cover formats from which they could choose a new one. Further, given the finding of irreparable harm to Time and likelihood of confusion among consumers, allowing Globe to continue to use its current cover format could cause serious harm to Time. Therefore, the balance of hardships weigh in Time's favor.

Conclusion

Time has established a trade dress in the *People* cover format which includes the condensed white lettering, and the display of the logo with a contrasting colored border. Globe has not shown that there is no likelihood of confusion, thus Time is likely to succeed on the merits of their claim of trademark infringement. Further, Time has shown that they will suffer irreparable harm if the injunction is not granted and that the balance of hardships tips in their favor. Further, for the reasons set forth above, Time's motion for a preliminary injunction is granted.

It is so ordered.

Patent and Trademark Office
Board of Patent Appeals and Interferences

Ex parte Gray

No. 88-0437

Decided August 17, 1988, and January 17, 1989

Released March 14, 1989

PATENTS

1. Patentability/Validity — Obviousness — In general (§115.0901)

Patentability/Validity — Obviousness — Relevant prior art (§115.0903)

Patent and Trademark Office does not have facilities for examining and comparing applicants' claimed human nerve growth factor, which is product-by-process claim, with prior art, and thus applicants had burden of persuasion to make some comparison between materials in order to establish unexpected properties for claimed factor, and applicants, having failed to do so, cannot contend on appeal that any doubt as to difference between two materials should be resolved in favor of patentability, since obviousness does not require absolute predictability.

2. Patentability/Validity — Obviousness — Relevant prior art (§115.0903)

Applicant can be required to prove that prior art products do not necessarily or inherently possess characteristics of claimed product, and thus applicants, on appeal of rejection in which issue is whether prior art factor is identical or patentably indistinct from that of material on appeal, have burden of showing that inherency is not involved.

3. Patentability/Validity — Obviousness — Evidence of (§115.0906)

Mere conclusory statements in publication item are no more probative of non-obviousness than such statements would be in applicant's specification, and, even if such unverified statements were to be considered as those of expert in art, such statements would be inadequate in view of lack of any factual supporting evidence.

4. Patentability/Validity — Obviousness — In general (§115.0901)

Mere purity of claimed compound does not render substance unobvious.

5. Patentability/Validity — Obviousness — Relevant prior art (§115.0903)

Patentability/Validity — Adequacy of disclosure (§115.12)

Applicants whose claims for human nerve growth factor synthesized through use of recombinant DNA technology were rejected for obviousness must, in order to raise question of non-enablement of prior art, provide at very least declaration by person having ordinary skill in subject art that no method was known to that person prior to claimed invention whereby claimed material might have been synthesized.

Appeal from rejection of claims (Howard E. Schain, primary examiner, G.D. Draper, examiner).

Application for patent filed by Alane M. Gray and Axel Ullrich, serial no. 471,962, on March 3, 1983. From examiner's decision rejecting claims, applicants appeal. Affirmed.

Max D. Hensley, San Francisco, Calif., for appellants.

Before Pellman, Winters, and W. Smith, examiners-in-chief.

Pellman, examiner-in-chief.

This is an appeal from the examiner's decision finally rejecting claims 1, 11, 12, 13 and 15 through 18, remaining claims 19 and 20 having been withdrawn from consideration by the examiner. However, since, by amendment, claims 13, 15 and 16 were canceled, the claims before us for consideration are 1, 11, 12, 17 and 18.

The subject matter on appeal involves the human nerve growth factor β-NGF, identified by the particular amino acid sequence and being free from other proteins of human origin (claim 1). The invention also includes pharmaceutical compositions containing said nerve factor (claims 11 and 12) and said human nerve factor in which the amino acid sequence is preceded by a methionyl group (claims 17), as well as a composition containing the factor of claim 17 (claim 18). The particular human nerve factor of the present invention has been synthesized through the use of recombinant DNA technology and thus, is free from human proteins that would otherwise be expected to contaminate the composition. To describe the invention in greater detail and illustrate the claims on appeal, a copy of claim 1 is appended to this decision.

For evidence of obviousness, the references identified below are cited by the examiner.

Goldstein et al. (Goldstein) "Isolation of Human Nerve Growth Factor From Placental Tissue," Neurochemical Research *3*, 175-183 (1978)

Walker et al. (Walker), "Human Nerve Growth Factor: Lack of Immunocrossreactivity with Mouse Nerve Growth Factor," Life Sciences *26*, 195-200 (1980)

All of the claims stand rejected for being unpatentable (35 U.S.C. 103) in view of Goldstein or Walker. The examiner, at page 2 of the answer states that:

"Each of these prior art discloses human β-NGF that appears to be the same as that claimed wherein such was isolated from human placental tissue, versus the claimed β-NGF that was produced by recombinant techniques."

In the sentence bridging pages 2 and 3 of the answer, the examiner notes that the sequencing of a protein does not make the protein different, but merely constitutes a further characterization of the known material.

In response to the examiner's arguments, beginning at page 5 of the brief appellants

set forth their own arguments. Appellants apparently divide their argument into three points. The first is that the human β-NGF of the references is not inherently that of appellants. Second, appellants contend that the reference human nerve growth factor is not free from other human proteins. Finally, we are told that the cited prior art does not teach or suggest methionyl N-terminal human β-NGF.

At page 6 of their brief, appellants refer to the publication edited by Black, *Cellular and Molecular Biology of Neuronal Development*, Plenum Press, New York, Chapter 20, Breakefield et al, pages 309-328 (1984). Appellants refer specifically to page 310, wherein the author states that:

> "To establish whether patients with dysautonomia make an altered form of β-NGF, it is necessary to characterize the human form of this protein. This has been difficult, and although there are a number of reports on preliminary identification of a human NGF-like molecule (Goldstein *et al.*, 1978; Walker *et. al.*, 1980), no one has conclusively demonstrated its presence."

Appellants rely upon the foregoing as evidence that the Goldstein and Walker reports are merely preliminary and inconclusive.

At page 8 of their brief, appellants focus on the difference in the interpretation of Walker by the examiner vis-a-vis that by appellants as to the lack of immunological cross-reactivity between the art human β-NGF and murine β-NGF. Appellants conclude that the point is not whose theory is right, but contend that "when legitimate disputes arise about polypeptide identity they must-in view of prior board precedent, be resolved in appellants' favor. Rejections cannot be properly maintained on "maybe" references."

Beginning at page 9 of their brief, appellants raise the question of the purity of the claimed human β-NGF as compared with that of the references. Appellants explain that, due to the method of preparation, their nerve growth factor is free from any other human proteins. At page 10 of the brief, appellants query "why would the art be motivated to attempt to further purify human "β-NGF" beyond the level reported by Goldstein *et al* and Walker *et al*? If so motivated, does the art reasonably teach one of ordinary skill how to do so?"

In connection with the foregoing, at page 10 of the brief, appellants suggest that even if art were applied showing recombinant methods for synthesizing proteins, it would be clear from their discussion that more than a conventional recombinant method was involved in the preparation of the claimed human nerve growth factor.

At page 11 of their brief, appellants discuss the methionyl N-terminal human nerve growth factor. We are informed that "no reference of record teaches any reason for wanting to make methionyl β-NGF, and no reference teaches how to do so even if that was an objective. With regard to the therapeutic formulation of claim 18, there is no teaching or suggestion as to what sort of biological activity to reasonably expect from the methionyl N-terminal variant."

Although due consideration has been given to the opposing arguments and supporting evidence of appellants and of the examiner, we are unpersuaded of reversible error in the examiner's rejection, which will be sustained.

While the present claims are drafted in the form of a compound or a composition, the rationale underlying appellants' arguments is founded on the proposition that the claims are directed to a product-by-process. In any event, we are convinced that the legal philosophy employed in rejections involving products-by-process should be employed with respect to the claims before us. That is, insofar as we can observe, the difference between the material of Goldstein and of Walker and that claimed by appellants herein resides in the method of obtaining the human growth factor. The prior art material is recovered from natural sources and purified, while appellants' is produced by recombinant DNA methodology. However, the dispositive issue before us is whether the claimed factor exhibits any unexpected properties compared with that described by the cited publication items.

To answer the foregoing question, we turn to the decision in *In re Brown*, 59 CCPA 1036, 459 F.2d 531, 173 USPQ 685 (1972) wherein, at 59 CCPA 1041, Judge Baldwin, delivering the court's opinion, explains:

> "We are therefore of the opinion that when the prior art discloses a product which reasonably appears to be either identical with or only slightly different than a product claimed in a product-by-process claim, a rejection based alternatively on either section 102 or section 103 of the statute is eminently fair and acceptable. As a practical matter, the Patent Office is not equipped to manufacture products by the myriad of processes put before it and then obtain prior art products and make physical comparisons therewith."

[1] Consistent with the court's holding, we find that, in the present case, the Office does not have the facilities for examining and comparing appellants' growth factor with that disclosed by Walker and by Goldstein. It is therefore entirely proper that appellants should have shouldered their burden of persuasion and made some comparison between the two materials to establish unexpected properties for the claimed factor. Having failed to do so, appellants are in a poor position now to contend that any doubt as to the difference between the two materials should be resolved in *favor* of patentability. Appellants do not inform us of the legal basis for their conclusion that this Board has held that doubt should be resolved in favor of an applicant and we are aware of no such recent decision. On the other hand, our reviewing tribunal, the United States Court of Customs and Patent Appeals in *In re Mixon*, 59 CCPA 1996, 470 F.2d 1374, 176 USPQ 296 (1973), responsive to Chief Judge Worley's discussion of the "rule of doubt", Judges Rich, Almond, Baldwin and Lane, in their concurring opinion state:

> "Since we have not been following any 'rule of doubt' policy and since that question is not involved in the present case we do not agree with the additional comments of the author."

In fact, rather than resolving doubt in favor of the applicant, the court has often held that obviousness does not require absolute predictability. See the decisions in *In re Merck and Company, Inc.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986) and *In re Lamberti*, 545 F.2d 747, 192 USPQ 278 (CCPA 1976).

[2] At page 5 of their brief, appellants contend that human β-NGF, as described by Walker or Goldstein, is not "inherently" that of appellant. However, this has not been established. Appellants' attention is invited to the decision in *In re Best*, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977), wherein the court held that the PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his claimed product. Accordingly, since the issue in the present appeal is whether the prior art factor is identical or patentably indistinct from that of the material on appeal, appellants have the burden of showing that inherency is not involved.

[3] Following the court's guidance in *In re Johnson*, 747 F.2d 1456, 223 USPQ 1260 (Fed. Cir. 1984), we have weighed the examiner's evidence of obviousness against appellants' countervailing evidence to determine whether the claims are patentable notwithstanding the references of record. It appears that appellants rely heavily upon the publication item by Breakefield, particularly pages 310 and 311. We are well aware that the author dismisses the "preliminary identification of a human β-NGF-like molecule" by Goldstein and Walker and concludes that no one has conclusively demonstrated its presence. Nevertheless, we do not interpret the subjective statement by Breakefield as adequate to overcome the specific findings reported by Goldstein and Walker. Mere conclusory statements in a publication item are no more probative of nonobviousness than would be said statements in appellants' specification. Compare *In re D'Ancicco*, 59 CCPA 748, 452 F.2d 1060, 172 USPQ 241 (1972). Moreover, even if we were to consider the unverified statements in the publication article as those of an expert in the art, the statements would be inadequate because of the lack of factual supporting evidence. Compare *In re Grunwell*, 609 F.2d 486, 203 USPQ 1055 (CCPA 1979).

The present situation is somewhat similar to that confronting the court in *Scripps Clinic & Research Foundation v. Genentech Inc.*, ——— F.Supp. ——— , 3 USPQ2d 1481 (DC NCalif 1987) wherein human blood-clotting factor VIII:C was involved. At page 3 USPQ2d 1487, the court points out that:

> Scripps also alleges infringement of product claims 24 through 29 covering concentrated preparations of "human Factor VIII:C.
>
> According to Scripps, these claims cover preparations, in the specified ranges of purity and potency, of Factor VIII:C with the functional and structural characteristics of the protein as it occurs naturally in humans.[6] Genentech, on the other hand, argues that Scripps' claims are limited to Factor VIII:C derived from human blood plasma. The issue posed is whether the asserted product claims must be interpreted to apply solely to concentrates of Factor VIII:C derived directly from human blood plasma or whether they extend also to other concentrates of Factor VIII:C having the same characteristics as those derived from human blood plasma.

In the paragraph bridging pages 1488-1489, the court explains that:

"the excerpts quoted by Genentech from deposition testimony of Drs. Katzmann and Zimmerman, Scripps' experts, that 'human' means 'obtained from human blood', are not probative on the issue of interpreting the claims. Dr. Katzmann's answer related to Factor V, not Factor VIII, and Dr. Zimmerman's answer did not purport to give an interpretation of the particular claim language. Human factor VIII:C as claimed in the patent therefore applies to any Factor VIII:C preparation, regardless of how produced, having the same material structural and functional characteristics as the plasma-derived preparation."

We are convinced that our decision herein is completely consistent with and supported by the above-noted holding of the District court in Northern California.

In the interest of completeness, we call attention to two other decisions that appear relevant to our present holding. The first of these is *In re Bergstrom*,[1] 57 CCPA 1240, 427 F.2d 1394, 166 USPQ 256 (1970), involving a rejection of certain pure prostaglandin compounds for not being novel in light of the material from which it was extracted. At page 57 CCPA 1250, the court held as follows:

"We need not decide the merits of that matter, for the fundamental error in the board's position, as we see it, is the analysis and answer it gave to the sole issue it accurately posed — 'whether the *claimed* pure materials are *novel* as compared with the *less pure* materials of the reference.' [emphasis supplied.] It seems to us that the answer to that question is self-evident: by definition, pure materials necessarily differ are the only ones existing and available as a standard of reference, as seems to be the situation here, perforce the 'pure' materials are 'new' with respect to them."

The other decision relevant to the facts before us, is In re *Wakefield*, 57 CCPA 959, 422 F.2d 897, 164 USPQ 636 (1970). In the *Wakefield* case, the claimed subject matter was synthetic rubber, while the prior art showed the corresponding naturally occurring product. At page 57 CCPA 966, Judge Lane, speaking for the court, disagreed with the board that the word "synthetic" as used in the claims would be applicable to purified natural product. In delivering the court's opinion, Judge Lane held that:

"we now turn to the examiner's view adopted by the Board, that the synthetic product is so similar to the natural product, purified to the extent allegedly shown in Davis, as to be '*prima facie* obvious'. We would agree with this conclusion as a tentative one based on similarity of structure and gross characteristics. However, such tentative conclusions of obviousness are rebutted in those instances where there was, at the time the invention was made, no known or obvious method of making the claimed composition, or where the claimed composition is found to possess unexpected characteristics. At least the first situation is present in the case before us, since it cannot be said that a method of making the claimed synthetic product would be known or obvious from Davis."

Although we acknowledge that our holding in the present case appears to be in conflict with the court's limited holding in the Wakefield appeal, we are convinced that our decision is consonant with the overwhelming weight of current patent jurisprudence involving questions of the type posed by appellants. Moreover, we point out that no objective evidence has been provided establishing that no method was known to those skilled in this field whereby the claimed material might have been synthesized. Therefore, although we have weighed all of the evidence and legal authorities, both pro and con, concerning the patentability of the claims on appeal, we find that the evidence and the weight of legal authority compels an affirmance of the examiner's rejection.

With respect to claims 17 and 18, the mere presence of a single methionyl moiety in a sequence of over 100 amino acids would not have been expected to alter the properties of the compound in a significant respect, in the absence of evidence to the contrary. It is our view that a minor inactive substituent on an otherwise unpatentable complex compound will not necessarily impart patentability to said compound. Thus, since we find claims 17 and 18 to be directed to an unpatentable modification of the compound to which the remaining claims are directed, these claims are held to be properly rejected for the same reasons as claims 1, 11 and 12.

For the reasons expressed above and those set forth in the answer, the examiner's decision rejecting claims 1, 11, 12, 17 and 18 is affirmed.

37 CFR 1.136(a) does not apply to the times for taking any subsequent action in connection with this appeal.

AFFIRMED.

[1] Cited by the court in footnote 6 in the *Scripps Clinic* decision.

ON REQUEST FOR RECONSIDERATION

January 17, 1989

Appellants request us to reconsider our holding mailed August 17, 1988 in which we affirmed the examiner's decision rejecting claims 1, 11, 12, 17 and 18.

At page 7 of their request, appellants state that there is no basis in the art of record for reasonably predicting that human beta-NGF could be produced by recombinant host cells. However, appellants appear to misapprehend the basis for our decision. It is our explicit holding that the product to which appellants' claims are directed would have been expected to be the same or substantially the same as that of the human nerve growth factor isolated by Goldstein and by Walker. At page 180 of his article, Goldstein states, under "DISCUSSION" that "we have demonstrated that human placental cotyledons are a suitable source for the purification of human NGF." Likewise, at page 195 of the other publication item cited by the examiner, Walker, in the "Summary", reports "Human B-nerve growth factor (hNGF) was purified from term human placenta." In the last six lines of the first paragraph at page 195, Walker discloses that:

Recently, Goldtein and coworkers (14) isolated and purified the biologically active β subunit of NGF from term human placenta. The present report confirms the presence of human β-NGF (hNGF) in term human placenta and reports the lack of immonocross-reactivity between mouse (mNGF) and hNGF using 6 different antisera to mNGF.

Beginning at page 5 of our decision, we pointed out that the legal principles enunciated in cases involving product-by-process claims are considered to be applicable herein. In support thereof, we cited the decision in *In re Brown*, which clearly explains the basis for our holding. That is, where the product disclosed in the prior art reasonably appears to be either identical with or slightly different from a product claimed by an applicant, there is pragmatic justification for placing the burden of going forward on the applicant. Furthermore, at page 10 of our decision, after acknowledging the apparent conflict between our opinion and the court's holding in *In re Wakefield*, we asserted that our decision is consonant with the overwhelming weight of current patent jurisprudence. Nevertheless, at page 16 of the request for reconsideration, appellants contend that they can find *no* decisions that support our position. Accordingly, appellants' attention is invited to the decisions in *In re Thorpe*, 777 F.2d 695, 227 USPQ 964 (Fed. Cir. 1985); *In re Marosi*, 710 F.2d 799, 218 USPQ 289 (Fed. Cir. 1983); *In re Fitzgerald*, 619 F.2d 67, 205 USPQ 594 (CCPA 1980); *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Avery*, 518 F.2d 1228, 186 USPQ 161 (CCPA 1975); *In re Fessman*, 489 F.2d 742, 180 USPQ 324 (CCPA 1974); and *In re Luck*, 476 F.2d 650, 177 USPQ 523 (CCPA 1973), just to name a few. Additionally, for appellants' convenience, we quote the following passage from *In re Best*, 195 USPQ 433-434, cited at page 7 of our decision:

Where, as here, the claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes, the PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his claimed product. See In re Ludtke,[2] supra. Whether the rejection is based on 'inherency' under 35 USC 102, on 'prima facie obviousness' under 35 USC 103, jointly or alternatively, the burden of proof is the same, and its fairness is evidenced by the PTO's inability to manufacture products or to obtain and compare prior art products.

[4] Having disposed of the arguments adverting to the product-by-process rationale, we note that, beginning at page 12 of their petition, appellants contend, in effect, that the pure form of a known substance may be patentable. To support their position, appellants refer to the famous "aspirin" case, cited at page 13 of the petition. Nonetheless, the *mere* purity of a compound, in itself, does not render the substance unobvious. Compare the decisions in *Ex parte Hartop*, 139 USPQ 525 (Bd.App. 1962); *Ex parte Steelmand*, 140 USPQ 189 (Bd.App. 1962); *In re Mehta*, 52 CCPA 1615, 347 F.2d 859, 146 USPQ 284 (1965); and *In re Avery*, *supra*. Furthermore, with respect to the decision in *In re Williams*, cited at page 14 of the petition, appellants' attention is invited to the subsequent decision in *In re Adamson*, 47 CCPA 839, 275 F.2d 952, 125 USPQ 233 (1960), which shows that the *Williams* decision resulted from the absence of relevant available evidence and does not represent a controlling rule of law. Also compare *In re*

[2] 58 CCPA 1159, 441 F.2d 660, 169 USPQ 563 (1971).

Anthony, 56 CCPA 1443, 414 F.2d 1383, 162 USPQ 594 (1969).

[5] At page 11 of our decision, we noted that no objective evidence had been provided establishing that a method was unknown to those skilled in the field whereby the claimed material might have been synthesized. In response thereto, at page 6 of the petition, appellants complain that this improperly shifts the burden of proof to them and places them in the untenable position of having to prove a negative of enormous scope. We disagree. Rather, we are of the opinion that, to raise the question of nonenablement, appellants must, at the very least, provide a declaration by a person having ordinary skill in the subject art that no method was known to him prior to the claimed invention whereby the claimed material might have been synthesized. In this connection, attention is invited to the decision in *In re Collins*, 59 CCPA 1170, 462 F.2d 538, 174 USPQ 333 (1972). It will be noted that in said decision, not only was an affidavit required, but the court agreed with the board that the submitted affidavit failed to establish that there was no known or obvious way to make heat exchangers falling within the scope of the appealed claims. However, in the interest of reducing the issues in this case, we will agree, *arguendo*, that the only methods for obtaining human nerve growth factor, other than that of appellants, are those disclosed by Goldstein and by Walker, of record.

At page 11 of the petition, appellants again rely upon Breakefield as casting doubt on the identity of the materials reported in the cited references. At page 12 of said petition, appellants state that the Breakefield reference "serves as expert testimony". We are then requested to provide our own evidence to counter the Breakefield et al. findings. Nevertheless, we will decline appellants' invitation.

The reason for requiring evidence in declaration or affidavit form is to obtain the assurances that any statements or representations made are correct, as provided by 35 U.S.C. 25 and 18 U.S.C. 1001. To permit the Breakefield publication, coauthored by one of the appellants herein, to substitute for expert testimony would circumvent the guarantees built into the statute by Congress. Accordingly, it is clear that we have no duty to offer evidence to counter the statements made by Breakefield. Rather, we are charged with the obligation of balancing all of the cited evidence of obviousness against the submitted evidence of non-obviousness. See the paragraph bridging pages 7 and 8 of our decision. In so weighing the evidence, we determined that the Breakefield publication item was inadequate to counterbalance the factual findings in the two publication items provided by the examiner. Consequently, we are convinced that our decision in the present case fully complies with the requirements of the statute and 37 C.F.R. 1.196(a).

Focusing now on claims 17 and 18, we observe that appellants, beginning at page 17 of their petition, again separately argue the patentability of human methionine beta-NGF. However, appellants have failed to respond to our finding that the protein containing the terminal methionyl group is substantially identical in structure to that purified by Goldstein and Walker. Since the decisions, such as *In re Brown*, of record, and *In re Best*, of record, agree that the disclosure of a *substantially* identical material in a prior art reference is sufficient to establish a prima facie case of obviousness and shift the burden of proof to appellants, we find no reason to arrive at a different conclusion.

At page 21 of their request, appellants acknowledge that the exhibits accompanying said request are newly cited and have not been considered by the examiner. Nonetheless, appellants request us to consider the references to economize our time. Ignoring the submitted publication items, appellants caution, will insure that said items will be presented in a continuing application. However, the same reasoning might be employed to extend the prosecution in any application handled by an examiner or to dispute any decision rendered by this Board. Since there must be an end to prosecution in any particular case, the mere possibility of further prosecution in a continuing application is insufficient reason for us to consider the publications cited by appellants herein. Compare *In re Fessman*, *supra*.

Although, to the extent indicated, we have reconsidered our decision, we decline to make any changes therein.

DENIED.

APPENDIX

1. Human β-NGF comprising the amino acid sequence ser-ser-ser-his-pro-ile-phe-his-arg-gly-glu-phe-ser-val-cys-asp-ser-val-ser-val-trp-vil-gly-asp-lys-thr-thr-ala-thr-asp-ile-lys-gly-lys-glu-val-met-val-leu- gly-glu-val-asn-ile-asn-asn-ser-val-phe-lys-gln-tyr-phe-phe-glu-thr-lys- cys-arg-asp-pro-asn-pro-val-asp-ser-gly-cys-arg-gly-ile-asp-ser-lys-his-trp-asn-ser-tyr-cys-thr-thr-thr-his-thr-phe-val-lys-ala-leu-thr-met-asp-gly-lys-gln-ala-ala-trp-arg-phe-ile-arg-ile-asp-thr-ala-cys-val-cys-val-leu-ser-arg-lys-ala-val-arg and which is free of other proteins of human origin.

District Court, N.D. California

Bausch & Lomb Inc. v. Barnes-Hind/Hydrocurve Inc.

No. C 83-20283 RPA

Decided March 22, 1989

PATENTS

1. Patentability/Validity — Obviousness — Relevant prior art (§115.0903)

Relevant prior art for determining obviousness of laser-engraved soft contact lens invention consists primarily of patent for laser apparatus for cutting holes in hard contact lenses and patent disclosing use of laser to engrave plastic surface of printing plate, plus development of laser technology between 1968 and 1976.

2. Patentability/Validity — Obviousness — Combining references (§115.0905)

Patent for laser-engraved soft contact lens is not obvious in view of prior patent on laser apparatus for fenestration of hard contact lenses in combination with prior patent disclosing use of laser to engrave plastic surface of printing plate, since latter patent "taught away" from using process on materials suitable for soft contact lenses, and since Court of Appeals for the Federal Circuit held, as law of case, that one skilled in art would not have construed laser fenestration teachings of former patent as applying to soft contact lenses.

3. Patentability/Validity — Obviousness — Secondary considerations generally (§115.0907)

Evidence of secondary considerations is not persuasive as to non-obviousness of patent for laser-engraved soft contact lens, since evidence of copying is inconclusive, since need to use automatic engraving was not long-felt but rather arose in early 1980s as result of growth in sales of soft contact lenses, and since patented marking system did not bring patent holder commercial success.

4. Infringement — Literal infringement (§120.05)

Plaintiff's patent for laser-engraved soft contact lens is infringed by defendants' contact lenses, since issue of infringement involves only whether surface of defendants' lens surrounding laser marks is "smooth," since specification indicates that "smooth" means absence of ridges that would scratch eye or eyelid, and since defendants' lenses do not inflame or irritate wearers' eyes.

Particular patents — General and mechanical — Contact lenses

4,194,814, Fischer, McCandless and Hager, transparent opthalmic lens having engraved surface indicia, valid and infringed.

On remand from the U.S. Court of Appeals for the Federal Circuit; 230 USPQ 416.

Action by Bausch & Lomb Inc. against Barnes-Hind/Hydrocurve Inc. and Barnes-Hind International Inc., for patent infringement. On remand from decision vacating judgment for defendants. Judgment for plaintiff.

Laurence H. Pretty and Craig S. Summers, of Pretty, Schroeder, Brueggemann & Clark, Los Angeles, Calif.; Anne L. Enea, of Ferrari, Alvarez, Olsen & Ottoboni, San Jose, Calif., for plaintiff.

John M. Calimafde, Paul H. Blaustein, and Dennis J. Mondolino, of Hopgood, Calimafde, Kalil, Blaustein & Judlowe, New York, N.Y.; Douglas K. Tribble, of Pillsbury, Madison & Sutro, San Jose, for defendant.

Aguilar, J.

FINDINGS OF FACT AND CONCLUSIONS OF LAW FOLLOWING REMAND

This patent infringement case returns to this Court on remand from the United States Court of Appeals for the Federal Circuit. The circuit vacated the judgment entered after trial as improper for the following reasons:

(1) this Court did not explicitly set forth in its Order the presumption of validity that it awarded the patent under 35 U.S.C. §282;

(2) the Court did not set forth factual findings on the four inquiries mandated by *Graham v. John Deere Co.*, 383 U.S. 1, 17 [148 USPQ 459, 467] (1966); and

(3) the circuit court found this Court engaged in improper claim construction.

case was submitted, amounting to no more than a statement of disagreement with the board, having heard oral argument for the Patent Office, and finding no error in the decision below, it is affirmed.

Affirmed.

58 CCPA

Application of Abner B. STRYKER, Jr.

Patent Appeal No. 8420.

United States Court of Customs and Patent Appeals.

Jan. 14, 1971.

Appeal from decision of the Board of Appeals of United States Patent Office, Serial No. 272,449, affirming rejection of both claims in application for improved process for producing polypropylene. The Court of Customs and Patent Appeals, Lane, J., held that where difference between claimed invention and reference disclosure were so small as to render claims obvious over reference, antedating affidavit submitted on claimant's behalf by representative of assignee of application removed reference disclosure as a reference notwithstanding affidavit, while alleging conception and reduction to practice of claimed improved process, including weight percentage limitations, before reference filing date, failed to show corroborating evidence of such weight percentage limitations.

Reversed.

1. Patents ⇐18

Claimed invention of flashing a suspension containing about 50–60 percent by weight polypropylene in liquid propylene to obtain a polymer containing not in excess of about two percent by weight propylene did not produce any unexpected results and it did not render claimed process unobvious over prior process involving separation of polypropylene from propylene by flashing of monomer from polymer in cyclone-type flash zone using mixture containing 35 percent solids by weight.

2. Patents ⇐18

Where difference between claimed invention and reference disclosure were so small as to render claims obvious over reference, antedating affidavit submitted on claimant's behalf by representative of assignee of application removed reference disclosure as a reference notwithstanding affidavit, while alleging conception and reduction to practice of claimed improved process for producing polypropylene, including weight percentage limitations, before reference filing date, failed to show corroborating evidence of such weight percentage limitations. 35 U.S.C.A. § 103.

Fred S. Valles, Ronald J. Carlson, Paramus, N. J., attorneys of record, for appellant.

S. Wm. Cochran, Washington, D. C., for the Commissioner of Patents; Jack E. Armore, Washington, D. C., of counsel.

Before RICH, ALMOND, BALDWIN, and LANE, Judges, and NEWMAN, Judge, United States Customs Court, sitting by designation.

LANE, Judge.

This appeal is from the decision of the Patent Office Board of Appeals, which affirmed the rejection of both claims in appellant's application serial No. 272,449, filed April 11, 1963, for an improved process for producing polypropylene. We reverse.

The invention is defined, and also adequately described for our purposes, by claim 1:

> The process of removing propylene diluent from a suspension consisting essentially of from about 50%–60% by weight polypropylene in liquid propylene obtained directly from a propylene polymerization reactor under the autogenous pressure of the reactor which consists essentially in feeding the said suspension from the reactor to a recovery zone of the cyclone type

maintained at substantially atmospheric pressure, whereby propylene diluent is flashed from the solid particles of polypropylene, leaving on said particles not in excess of about 2% by weight propylene, and recovering the thus treated polypropylene.

The claims were rejected as obvious over Harban,[1] who discloses separation of polypropylene from propylene by flashing of monomer from polymer in a cyclone-type flash zone. The Harban mixture is disclosed as containing 35% solids by weight, and the patent indicates that the separation achieved is nearly perfect, but does not state a specific percentage of separation.

[1] Appellant contends that he discovered that, unexpectedly, the use of a suspension containing 50–60% by weight polymer permitted direct discharge of the suspension into a flashing zone maintained at atmospheric pressure, and resulted in a residual monomer level of 2% or less. We have considered appellant's arguments on this point, but we agree with the Patent Office that appellant's polymer concentration does not produce any unexpected results and does not render the claimed process unobvious over Harban.

We turn now to appellant's alternative contention, i.e., even if the claimed processes are obvious over Harban, Harban is removed as a reference by the antedating affidavit submitted on appellant's behalf by a representative of the assignee of the application.[2] The board considered the affidavit deficient in that, while it alleged conception and reduction to practice of the claimed process, including the weight percentage limitations, before the Harban filing date, there was no corroborating evidence showing those weight percentage limitations. The board stated:

> The *claimed* invention must be shown in the affidavit, i.e., the alleged essence of the invention of flashing a suspension containing about 50%–60% by weight polypropylene in liquid propylene to obtain a polymer containing not in excess of about 2% by weight propylene must at least be demonstrated therein. In re Tanczyn, 52 CCPA 1630; 146 USPQ 298, 347 F.(2d) 830; 821 OG 849 [1965]. (Original emphasis.)

[2] We think the board erred in applying *Tanczyn* to the facts of this case. In *Tanczyn* we limited to a certain extent the language we used in In re Stempel, 241 F.2d 755, 44 CCPA 820 (1957), wherein we had stated that "all the applicant can be required to show is priority with respect to so much of the claimed invention as the reference happens to show." It will be recalled that in *Tanczyn* the appellant sought to remove a reference by an affidavit which showed prior possession by the appellant of subject matter on which the claims did not read but which corresponded to the subject matter disclosed in the reference sought to be removed. We found the affidavit insufficient to remove the reference, but we held the claims to be unobvious over the reference. In other words, the subject matter shown in the reference and the affidavit was so different from the claimed invention that the claims were unobvious and patentable over the reference. In the case before us the differences between the claimed invention and the reference disclosure are so small as to render the claims obvious over the reference. The features which the board found inadequately corroborated by appellant's evidence are the very features considered insufficient to patentably distinguish over the Harban reference. To hold that Harban is not removed by the showing here presented would lead to an anomalous result, i.e., if appellant broadened his claims by deleting the weight limita-

1. U. S. patent 3,197,453, isued July 27, 1965, on an application filed July 11, 1961.

2. An additional affidavit submitted by appellant's attorney stated that appellant had left the assignee's employ, was in a relatively inaccessible area of Peru, and hence was unavailable to execute the affidavit himself.

tions, so as to read literally on Harban, Harban would not be available as a reference against such broadened claims because appellant's antedating affidavit would be satisfactory in every respect.[3] It cannot be the law that the same affidavit is insufficient to remove the same reference applied against the slightly narrower claims presented here.

For the foregoing reasons, the board's rejection of the claims as unpatentable over Harban, under 35 U.S.C. § 103, is reversed.

Reversed.

58 CCPA

Application of Robert TOUVAY.
Patent Appeal No. 8370.

United States Court of Customs and Patent Appeals.

Jan. 14, 1971.

Appeal from Patent Office Board of Appeals' denial of claims Nos. 1–13, inclusive, of serial No. 318,421 for "manufacture of glass." The Court of Customs and Patent Appeals, Baldwin, J., held that claims were properly denied for obviousness.

Affirmed.

1. Patents ⇐18

Claims 1 to 13, inclusive, of patent application serial No. 318,421 for "manufacture of glass" were not patentable because of obviousness. 35 U.S.C.A. § 103.

2. Patents ⇐113(1)

On appeal from patent office's denial of claims because of obviousness, arguments directed to significance of particular limitation are not ordinarily considered unless they were raised below. 35 U.S.C.A. § 103.

3. Patents ⇐36(1)

Any failure of patentee of prior art to incorporate disclosures of much earlier patents was not evidence of unobviousness where record did not show either that prior art patentee actually knew of the other references or that he was seeking to solve a problem that was solved by applicant's invention. 35 U.S.C.A. § 103.

John L. Seymour, Bauer & Seymour, New York City, attorney of record, for appellant.

S. Wm. Cochran, Washington, D. C., for the Commissioner of Patents. Jere W. Sears, Washington, D. C., of counsel.

Before RICH, ALMOND, BALDWIN and LANE, Judges, and RE, Judge, United States Customs Court, sitting by designation.

BALDWIN, Judge.

Touvay seeks review of the decision of the Patent Office Board of Appeals which affirmed the examiner's rejection of claims 1–13, the only claims in his application,[1] as obvious in view of the prior art under 35 U.S.C. § 103.

THE INVENTION

Appellant's application discloses glass manufacturing apparatus of the type which includes generally

(1) a melting furnace heated by a series of combustion burners in the upper part thereof,

(2) discharge means for the furnace, including means for forming the molten glass into a ribbon, and

(3) a heated flotation chamber which receives the glass ribbon and

3. We recognize that, had appellant presented broader claims, the Patent Office might have found other, earlier art on which to reject them.

1. Serial No. 318,421, filed October 23, 1963, for "Manufacture of Glass".

Application of Donald Francis BEST, Anthony Peter Bolton and Herbert Charles Shaw.

Patent Appeal No. 77-509.

United States Court of Customs and Patent Appeals.

Oct. 13, 1977.

Applicant appealed from a decision of the Patent and Trademark Office Board of Appeals, Serial No. 347,216, sustaining rejections of claims on an application for "Catalyst for Hydrocarbon Conversion Processes and Process for Preparing Same." The Court of Customs and Patent Appeals, Markey, Chief Judge, held that product and process claims were properly rejected as anticipated or as obvious in light of prior art.

Affirmed.

1. **Patents** ⇐18, 66(1.12, 1.24)

Product and process claims of application for "Catalyst for Hydrocarbon Conversion Processes and Process for Preparing Same," were properly rejected as anticipated or as obvious in light of prior art. 35 U.S.C.A. §§ 102, 103.

2. **Patents** ⇐66(1.12)

Indirect comparisons, based on established scientific principles, can validly be applied to distinguish claimed chemical process of product from that disclosed in prior art. 35 U.S.C.A. § 103.

3. **Patents** ⇐32, 58

Where claimed and prior art products are identically or substantially identical, or are produced by identical or substantially identical processes, Patent and Trademark Office can require applicant to prove that prior art products do not necessarily or inherently possess characteristics of his claimed product; and whether rejection is based on inherency or on prima facie obviousness, jointly or alternatively, burden of proof is the same and its fairness is evidenced by Patent and Trademark Office's inability to manufacture products or to obtain and compare prior art products. 35 U.S.C.A. §§ 102, 103.

4. **Patents** ⇐18, 66(1)

There is nothing inconsistent in concurrent rejection of patent claims for obviousness and for anticipation by inherency. 35 U.S.C.A. §§ 102, 103.

Richard G. Miller, New York City, attorney of record, for appellants, James C. Arvantes, Arlington, Va., of counsel.

Joseph F. Nakamura, Washington, D. C., for the Commissioner of Patents, Gerald H. Bjorge, Washington, D. C., of counsel.

Before MARKEY, C. J., RICH, BALDWIN and LANE, JJ., and FORD, J., United States Customs Court.

MARKEY, Chief Judge.

Appeal from the decision of the Patent and Trademark Office (PTO) Board of Appeals (board) sustaining rejections of claims 1–7 under 35 U.S.C. § 102 or 35 U.S.C. § 103, and claims 3–7 under 35 U.S.C. § 112, of appellants' application serial No. 347,216, filed April 2, 1973, for "Catalyst for Hydrocarbon Conversion Processes and Process for Preparing Same."[1] We affirm.

The Invention

The invention relates to zeolitic molecular sieve catalyst compositions useful in hydrocarbon conversion and to a process for producing them. Claim 1 is illustrative of the product claims:

1. A crystalline zeolitic aluminosilicate having a SiO_2/Al_2O_3 molar ratio of from 4.6 to 5.4, a face centered cubic unit cell having an a_o of greater than 24.45 to 24.55A, an Na_2O/Al_2O_3 molar ratio of not greater than 0.25, an adsorptive capacity in the dehydrated state for oxygen of at least 26 weight per cent at 100 mm Hg oxygen pressure and %ao183°C., an ion

1. A continuation-in-part of serial No. 145,900, filed May 21, 1971.

exchange capacity of from 0.15 to 0.35 and having the essential X-ray powder diffraction pattern of zeolite Y with the proviso that the d-spacing thereof having the Miller Indices 331 is at least as great in intensity as the line thereof having the Miller Indices 533.

Claim 3 is illustrative of the process claims:

> 3. Process for preparing a hydrolytically-stable zeolitic aluminosilicate which comprises providing an ion-exchanged zeolite Y having the following composition in terms of mole ratios of oxides
>
> 0.75 %ao 0.9$(A)_2O$: 0.1 %ao 0.25 Na_2O: Al_2O_3: 4.6%ao5.4 SiO_2: yH_2O
>
> wherein "A" represents H^+ or NH_4^+ or a mixture thereof, and wherein y has a value of from zero to nine, heating the zeolite at a temperature between 550°C. and 800°C. for a period of at least 0.25 hours in an inert atmosphere comprising sufficient steam to prevent dehydroxylation of the zeolite, removing at least a major proportion of any ammonia generated by the heated zeolite from contact with the zeolite, and cooling the steamed zeolite to a temperature below 350°C. at a rate sufficiently rapid that the cooled zeolite exhibits an X-ray powder diffraction pattern having the d-spacing corresponding to the Miller Indices, hkl, of 331 at least as strong in intensity as that corresponding to the Miller Indices 533, prior to any post-steaming ion exchange treatment.

Claim 2 is restricted to a zeolite of claim 1 with a Na_2O/Al_2O_3 molar ratio of less than 0.038. Claims 4–7 add further process restrictions as to starting materials or process steps. All of the claims stand or fall with claims 1 and 3.

As recognized in the prior art, crystalline zeolitic aluminosilicates with high concentrations of sodium cations do not make good hydrocarbon conversion catalysts. For this reason sodium cations are replaced with non-metallic cations such as hydrogen or ammonium. The hydrogen or ammonium cations are removed by calcination, producing a decationized zeolite. Such decationized zeolites have poor hydrothermal stability, i. e., they lose their crystallinity upon reheating after contact with water.

The process of appealed claims 3–7 is a stabilization procedure for such low-sodium zeolites wherein a thermal treatment in the presence of steam is followed by a particular cool-down step. The zeolitic compositions of claims 1–2 represent the products of the claimed process.

The 102/103 Rejections

The references relied upon were:

Maher et al. (Maher)	3,293,192	Dec. 20, 1966
Hansford	3,354,077	Nov. 21, 1967
McDaniel et al. (McDaniel)	3,449,070	June 10, 1969
Kerr et al (Kerr I)	3,493,519	Feb. 3, 1970
Kerr (Kerr II)	3,513,108	May 19, 1970

All claims were rejected under 35 U.S.C. § 102 or 35 U.S.C. § 103 as unpatentable over Hansford. Claims 1–2 were additionally rejected in view of each of Maher, McDaniel, Kerr I, and Kerr II.[2]

Hansford discloses a method for producing a hydrothermally stable Y-sieve zeolite composition by calcining an ammonium zeolite Y for 2 or more hours in an atmosphere containing water vapor at a temperature of from 700°F to 1200°F (338°C–649°C). The starting material is disclosed by Hansford as having a SiO_2/Al_2O_3 molar ratio of 4 to 6 and a reduced Na_2O content of 0.6% to 2.5% by weight (appellants claim 0.1 %ao 0.25 Na_2O/Al_2O_3 molar ratio and disclose 2.48% by weight in example 10 of their specification). In rejecting claims 1–7 on Hansford, the examiner asserted that a major portion of any ammonia generated during calcination would inherently be removed from contact with the zeolite, because the gaseous atmosphere disclosed by Hansford was in the form of a moving stream. Also with respect to Hansford, the examiner believed the cooling rate of the zeolite after stabilization to be within the

2. The examiner rejected claims 1–7 under 35 U.S.C. § 103 as unpatentable over Kerr I, and claims 1, 2, 3, 6, and 7 under 35 U.S.C. § 103 as unpatentable over Kerr II. The board affirmed only in relation to claims 1–2 and reversed in relation to claims 3–7 over Kerr I and to claims 3, 6, and 7 over Kerr II.

terms of the appealed process claims. The claimed product being the unique result of the claimed process, the examiner, therefore, rejected both process and product claims as anticipated by Hansford, or, in any case, as obvious in view of Hansford.

In sustaining the rejection, the board added its view of Hansford.

> All the positive process limitations are expressly disclosed except for the functionally expressed rate of cooling. However, there is nothing to indicate that this rate of cooling in any way differs from the normal rate resulting from removal of the heat source. Thus, the examiner's conclusion that those parameters of the resultant product which are recited in the appealed claims but are not expressly disclosed in the reference would be inherent is a reasonable one, absent convincing evidence to the contrary. Appellants have presented no such convincing evidence. No comparison has been made between appellants' process and product and the process and product disclosed in the Hansford patent. The comparative data contained in appellants' specification and in an affidavit under 37 CFR 1.132 do not relate to the reference but merely illustrate the result of deviating from appellants' process. Such deviations appear to be also outside the scope of the Hansford teaching.

OPINION

I. The Process Claims

[1, 2] The appellants urge that, because Hansford is silent on appellants' crucial cool-down step and on his apparatus, a direct comparison between the claimed process and that of Hansford is impossible. Appellants correctly state that indirect comparisons, based on established scientific principles, can validly be applied to distinguish a claimed chemical process or product from that disclosed in the prior art. *In re Blondel*, 499 F.2d 1311, 182 USPQ 294 (CCPA 1974). However, our analysis of the comparative data offered by appellants convinces us that the burden of rebutting the PTO's reasonable assertion of inherency under 35 U.S.C. § 102, or of prima facie obviousness under 35 U.S.C. § 103, has not been met.

Our reading of Hansford leads us to conclude, as did the board, that all process limitations of claim 3 are expressly disclosed by Hansford, except for the functionally expressed rate of cooling. Because any sample of Hansford's calcined zeolitic catalyst would necessarily be cooled to facilitate subsequent handling, the conclusion of the examiner that such cooling is encompassed by the terms of the appealed claims was reasonable.

The board did not specifically mention the absence of ammonia as a result of "removing at least a major proportion of any ammonia generated by the heated zeolite from contact with the zeolite," as recited in claim 3. Its affirmance of the examiner, however, carried with it a concurrence in the examiner's view that Hansford discloses a gaseous atmosphere in a "stream." In concluding that Hansford expressly disclosed all process limitations except the cooling rate, the board necessarily considered Hansford's disclosure of a gas "stream" as equivalent to a disclosure of the removal of generated ammonia from contact with the zeolite. Though appellants argued before the board and before us that Hansford is silent on the matter, they have not provided any effective argument nor submitted any evidence that a gas stream does not inherently remove generated ammonia.

This court, in *In re Swinehart*, 439 F.2d 210, 58 CCPA 1027, 169 USPQ 226 (1971), set forth the burden of proof required to overcome an inherency rejection:

> [I]t is elementary that the mere recitation of a newly discovered function or property, inherently possessed by things in the prior art, does not cause a claim drawn to those things to distinguish over the prior art. Additionally, where the Patent Office has reason to believe that a functional limitation asserted to be critical for establishing novelty in the claimed subject matter may, in fact, be

an inherent characteristic of the prior art, it possesses the authority to require the applicant to prove that the subject matter shown to be in the prior art does not possess the characteristic relied on. [439 F.2d at 212–13, 58 CCPA at 1031, 169 USPQ at 229.]

This burden was involved in *In re Ludtke*, 441 F.2d 660, 58 CCPA 1159, 169 USPQ 563 (1971), and is applicable to product and process claims reasonably considered as possessing the allegedly inherent characteristics.

The proof required here relates to appellants' cool-down step. The only comparative data on the cool-down rate are found in examples 1(a) and 1(c) of appellants' specification. Those data merely establish that there may be cooling rates which are not the cooling rate functionally set forth in claim 3. Absent from the data is a comparison of X-ray diffraction patterns, the phenomenon employed in defining cooling rates. Thus the data found in the specification are insufficient to rebut the inherency rejection of the process claims.

In view of Hansford's silence on cool-down rate and on his apparatus, appellants need only have shown that the cool-down rate, for a typical laboratory-scale sample when employed in Hansford's process, would not yield a cooled zeolite with the X-ray diffraction pattern of claim 3. Appellants failed to do even that.

Appellants submitted an affidavit of Skeels,[3] the thrust of which was the assertion that, although cooling rates can vary greatly, depending on the apparatus employed and the quantity of zeolite treated, some normal cooling rates with typical laboratory equipment are much slower than that disclosed in appellants' specification and encompassed by claim 3. The Skeels affidavit fails for lack of a showing that such normal cooling rates are not rapid enough to result in the particular X-ray diffraction pattern recited in appealed claim 3.

We affirm the board's decision upholding the rejection of process claims 3–7 as anticipated under 35 U.S.C. § 102 or as obvious under 35 U.S.C. § 103, and do not reach the rejection of claims 3–7 under 35 U.S.C. § 112.

II. The Product Claims

Product claims 1–2 were rejected as unpatentable over each of Hansford, Maher, McDaniel, Kerr I, and Kerr II. We find it necessary to consider only Hansford.

[3, 4] Where, as here, the claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes, the PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his claimed product. See *In re Ludtke, supra.* Whether the rejection is based on "inherency" under 35 U.S.C. § 102, on "prima facie obviousness" under 35 U.S.C. § 103, jointly or alternatively,[4] the burden of proof is the same, and its fairness is evidenced by the PTO's inability to manufacture products or to obtain and compare prior art products. See *In re Brown*, 459 F.2d 531, 59 CCPA 1036, 173 USPQ 685 (1972).

In product claim 1 appellants have "fingerprinted" their crystalline zeolitic aluminosilicate by reciting six parameters, two directly compositional in nature, SiO_2/Al_2O_3 and Na_2O/Al_2O_3 molar ratios. The other parameters are the cubic unit cell size (a_o), the ion exchange capacity, the oxygen adsorption capacity, and the X-ray powder diffraction pattern. Hansford discloses SiO

3. The board considered the Skeels affidavit untimely and treated it as mere argument. But if the board's statement that appellants' cooling rate did not differ from "the normal rate resulting from removal of the heat source" were considered a new ground of rejection and the affidavit be considered evidence, the data presented would not rebut the inherency rejection, absent a showing of X-ray diffraction patterns for cooled zeolites.

4. There is nothing inconsistent in concurrent rejection for obviousness under 35 U.S.C. § 103 and for anticipation by inherency under 35 U.S.C. § 102. *In re Skoner*, 517 F.2d 947, 186 USPQ 80 (CCPA 1975); *In re Pearson*, 494 F.2d 1399, 181 USPQ 641 (CCPA 1974).

$_2/Al_2O_3$ and Na_2O/Al_2O_3 molar ratios within the ranges recited in claim 1, but does not specifically disclose the other parameters.

Though urging that the other parameters are the unique result of their claimed process, appellants have offered no comparison of those other parameters with the corresponding parameters of Hansford's product.

We affirm the decision of the board upholding the rejections of product claims 1–2 on Hansford and do not reach the rejections of claims 1–2 on Maker, McDaniel, Lerr I, of Kerr II.

The decision of the board is affirmed.

AFFIRMED.

the conclusion that the *degree* of analgesic potency exhibited by one compound of the genus establishes the degree of potency of the genus or any other of its members. Accordingly, appellant's arguments for patentability based upon the degree of analgesic activity are considered pertinent only to claim 4, which defines the only compound for which datum has been provided.

It should be noted that no data are available for piperidine esters which differ *only* in the arrangement of the 4-ester group. Thus, generalizations based upon the data set forth in the above table are at best inconclusive. The data tend to indicate that "reverse" esters are more potent analgesics than "normal" esters when the standard is meperidine hydrochloride, but the opposite trend is indicated when the standard is the 1-benzyl compound. One thing is clear, and that is that the prior art suggests that the compound of claim 4 would be an analgesic. While the compound of claim 4 has a significantly greater potency than the tested Carabateas claimed "reverse" esters, the above table reveals that the former compound differs from the latter compounds by at least one methylene group, in one instance the difference being in the "A" substituent. Conceivably, these methylene groups have a significant influence on analgesic potency.

[2] Thus, it cannot be determined with any degree of certainty to what the increased potency is attributable. We are unable to find "clear and convincing evidence," as required by this court in In re Lohr, 317 F.2d 388, 50 CCPA 1274, that appellant's compounds possess unexpected activity compared to the *closest* Carabateas reference compound. Because of appellant's lack of proof, the decision of the board is affirmed.

Affirmed.

SMITH, J., concurs in the result.

53 CCPA

Application of Fritz HOSTETTLER and Eugene F. Cox.

Patent Appeal No. 7564.

United States Court of Customs and Patent Appeals.

Feb. 17, 1966.

Rehearing Denied May 5, 1966.

Proceeding on patent application No. 24,650 relating to a tin-containing catalyst for isocyanate reactions. From a decision of the Board of Appeals affirming examiner's rejection of claim, the applicants appealed. The United States Court of Customs and Patent Appeals, Martin, J., held that evidence was sufficient to establish that one of ordinary skill in the art would be satisfied from facts shown in affidavit in patent application that applicants had completed invention as defined in claims, and applicants should not have been required to submit facts showing that they reduced to practice that which was obvious in addition to those facts offered as showing a completion of the invention, for the purposes of antedating a reference.

Reversed.

1. Patents ⇐98

Rule requiring applicant for patent to make oath to facts showing a completion of invention does not mean affiant must show a reduction to practice of every embodiment of the invention, nor is that requirement coextensive with amount of disclosure necessary to support a claim under specification portion of statute. Patent Office Practice Rules rule 131, 35 U.S.C.A. App.; 35 U.S.C.A. § 112.

2. Patents ⇐91(4)

Evidence was sufficient to establish that one of ordinary skill in the art would be satisfied from facts shown in affidavit in patent application relating to tin-containing catalyst for isocyanate reactions that applicants had completed invention as defined in claims, and applicants should not have been required

submit facts showing that they reduced to practice that which was obvious in addition to those facts offered as showing a completion of the invention, for the purposes of antedating a reference. Patent Office Practice Rules, rule 131, 35 U.S.C.A. App.; 35 U.S.C.A. §§ 102(a), 112.

Charles J. Metz, Francis M. Fazio, New York City, Paul A. Rose, Washington, D. C., Louis C. Smith, New York City, for appellants.

Joseph Schimmel, Washington, D. C. George C. Roeming, Washington, D. C., counsel), for the Commissioner of Patents.

Before RICH, Acting Chief Judge, MARTIN, SMITH and ALMOND, Judges, and WILLIAM H. KIRKPATRICK.*

MARTIN, Judge.

The issue for determination in this appeal [1] from the Board of Appeals is sufficiency of an affidavit under Rule 131 to remove publications which are conceded to be prior art references under 35 U.S.C. § 102(a).

The invention is evident from the sole claim in the case on appeal here:

> 4. A process for producing a urethane which comprises reacting (a) a compound having at least one isocyanato group with (b) a compound having at least one alcoholic hydroxyl group, in the presence of a catalytic amount of stannous octoate, wherein the sole reactive groups present in both said compounds are isocyanato and aliphatic alcoholic hydroxyl groups, respectively.

It should be noted that the process claim, in calling for each reactant having "at least one" of the pertinent reactive groups, encompasses the use of alcohols and isocyanates of any "functionality" as reactants to produce compounds having a *single* NHCOO linkage, as well as those having a plurality of such linkages such as *poly*urethane resins and foams.[2] The reaction of the claimed process can be depicted in simplified form by the equation:

$$R^1 - NCO + HO - R^2 \xrightarrow[\text{Octoate}]{\text{Stannous}} R^1 - NH - \overset{\overset{O}{\|}}{C} - O - R^2$$

Isocyanato Group Containing Reactant	Hydroxyl Group Containing Reactant	Urethane Group Containing Product

R^1 and R^2 represent various organic moieties.

---

* States Senior District Judge for Eastern District of Pennsylvania, designated to participate in place of Chief Judge WORLEY, pursuant to provisions of section 294(d), Title 28, United States Code.

[1] Appeal PA 7564, is taken on application serial No. 24,650, filed April 26, 1960 for "Tin-Containing Catalyst for Isocyanate Reactions."

[2] Functionality in this context thus refers to the reactive or functional groups of the reactants. "Any functionality" means having one or any number of functional groups per reactant molecule.

The references relied on for the § 102 (a) rejection are:

Technical Information Bulletin, No. 28–F9, July 20, 1959 Mobay Chemical Co., Pittsburgh, Penna.

Modern Plastics, Feb. 1960; page 53.

There is no issue as to what those references show since the solicitor agrees that appellants adequately summarize them in their brief thus:

> The references * * * disclose the use of stannous octoate as a catalyst in the production of urethane foams which involves the reaction of polyfunctional alcohols with polyfunctional isocyanates to form polyurethanes. Thus, the references disclose the subject claimed invention employing polyfunctional reactants.

The Rule 131 affidavit alleges a completion of the invention prior to May 26, 1958,[3] which is prior to the effective date of the earliest reference. In the affidavit, reference is made to accompanying notebook pages on which was recorded an experiment using stannous octoate to catalyze the reaction of a *mono*functional alcohol (methanol) with a *mono*functional isocyanate (phenyl isocyanate) to produce a urethane containing only one NHCOO—group (methyl N-phenylcarbamate). The subject of the research is stated on the notebook pages to be "Catalytic Studies of the Reaction of Isocyanates with Active Hydrogen Compounds * * *," and the purpose of the particular experiment was "to determine the velocity coefficient for the [above noted] reaction * * using * * * Stannous Octoate * * as catalyst." The affidavit admittedly does not show facts establishing reduction to practice of a process involving use of stannous octoate to produce a polyurethane resin or foam.

The examiner was not satisfied by the affidavit, stating both in the Final Rejection and in the Answer:

> * * * Applicants' attention is directed to the premise of M.P.E.P. section 715.03 which states that the rejection is valid unless applicant overcomes the exact species of the reference by his affidavit, or else the affidavit shows an adequate generic disclosure. Applicants have failed to do this since their affidavit covers only one species methanol which is in fact generically different from the reference's species. As a matter of fact, the references all concern the formation of polymers, whereas the affidavit shows the reaction of methanol, a monofunctional compound with monoisocyanate, said reaction being unable to form a polymer. Thus the Stempel case [In re Stempel, 241 F.2d 755, 44 CCPA 820, 113 USPQ 77] is not applicable.

The board in affirming stated:

> In essence, the affidavit proves a reduction to practice of the simple monomeric reaction whereby methyl N-phenylcarbamate is produced from phenyl isocyanate and methanol, using stannous octoate as a catalyst. This may have been a useful preliminary or screening experiment raising hopes that the catalyst would be correspondingly useful in the preparation of urethane polymers, but it cannot be regarded as a reduction to practice of that principal aspect of the claimed process which involves the production of polyurethanes, particularly polyurethane foams. The simple monomer experiment is not deemed to be representative of the problems encountered in the preparation of polyurethane foams * * *, and certainly does not demonstrate

3. That date coincides with the filing date of a patent to Ikeda, No. 3,010,923 issued November 28, 1961, which was cited of interest in the prosecution but not relied on in the appeal.

beneficial results mentioned in * * appellants' specification.

Appellants may have carried out the simple reaction of their affidavit prior to the cited publications, but they did not complete the invention of the scope here claimed or the foamed polyurethane aspect taught in the references prior to the date of the references. Chronologically, appellants reacted phenyl isocyanate and methanol in the presence of stannous octoate and obtained methyl N-phenylcarbamate. Thereafter, the cited references were published disclosing the preparation of polyurethane foams using stannous octoate as the catalyst. Finally, the instant application was filed disclosing and claiming all aspects of urethane production using the specified catalyst. The record furnishes no basis for any different conclusion as to the chronological course of events and, clearly, it cannot be held that appellants were first as to all aspects of urethane production using stannous octoate as the catalyst.

We are not impressed by appellants' arguments that the procedure of their affidavit is representative of urethane production in general. The simple monomer reaction may be indicative of possible future utility of stannous octoate in the preparation of polyurethane foams, but the reaction is not so nearly identical that the completion of the simple monomer reaction can be regarded as constituting a completion of the considerably more complex polymer reaction.

Solicitor urges that the above position is particularly correct in view of the generally known unpredictability of catalytic activity, citing: Corona Cord Tire Co. v. Dovan Chemical Corp., 276 U.S. 358, 48 S.Ct. 380, 72 L.Ed. 610 (1928); In re Doumani, 281 F.2d 215, 47 CCPA 1120; Ex parte Meguerian, 124 USPQ 456 (Pat.Off.Bd.App.1960); Ex parte Fugate, 99 USPQ 54 (Pat.Off. Bd.App.1953).

Thus, the issue, more specifically stated, is whether the factual showings in the Rule 131 affidavit relating the catalysis of a process to produce a compound having a single urethane group is sufficient to antedate a reference under § 102(a) which shows the claimed process as producing polyurethane resins or foams.[4]

[1] We think the board erred in its view of what is the invention, and thereby demanded appellants show more in the affidavit than is necessary under Rule 131. Rule 131 requires applicant to make oath to facts showing a completion "of the invention." That requirement does not mean affiant must show a reduction to practice of every embodiment of the invention. Nor is that requirement coextensive with the amount of disclosure necessary to support a claim under 35 U.S.C. § 112.

The invention here is the use of a catalyst in a process involving an old reaction. As appellants state:

> * * * But has not the Board lost sight of that which appellants seek to claim, i. e., the use of a new catalyst for an old reaction? The Board emphasizes the functionality of the reactants, and thus whether or not the reactants are polymer-forming. But the Board has ignored the fact that, regardless of

[4] There is clearly no issue as to whether the specification is adequate to support the claim or that the claim is unduly broad, since the board reversed the examiner on that issue, stating:

> In our view, the nature of appellants' disclosure and the state of the prior art in the present case does not require that the known reactants be defined with greater particularity. We will not sustain the rejection of the appealed claim under 35 U.S.C. 112.

See In re Fong, 288 F.2d 932, 48 CCPA 897, 903.

functionality, alcohol plus isocyanate produces urethane, and it is the use of stannous octoate to catalyze this urethane-forming reaction that appellants seek to claim. The invention is predicated upon catalytic activity alone. The Rule 131 Affidavit * * * shows such catalytic activity thereby overcoming references whose sole *pertinent* disclosure is the same catalytic activity.

The apparent requirement of the Patent Office that appellants show production of other *products*, polyurethane resins or foams, is considered improper in view of the nature of the invention. See In re Fong, 288 F.2d 932, 48 CCPA 897, 902. As evidence that alcohols of any functionality can be reacted with isocyanates of any functionality, appellants rely on a patent to Rothrock, No. 2,374,136 issued April 17, 1945,[5] which states in pertinent part:

> * * * When the active hydrogen-containing substances [sic] is monomeric and contains only one active hydrogen-containing group, the product is in general monomeric. On the other hand, if both of the reactants are bifunctional, the product is polymeric; and, if one of the reactants is polymeric, the product is a modified polymer of higher molecular weight. * * *

The examiner's response, referred to by the board, was:

> * * * Applicants cite Example I [in Rothrock] as a "model reaction" similar to applicants', in that the effectiveness of the catalyst is established, without the formation of the polymer, by the reactants. Applicants have apparently closed their eyes to the other specific examples, wherein the results of using or not using the catalysts are disclosed, not with methanol and a diisocyanate, but with a diisocyanate and a bifunctional high polymer forming polyhydroxyl containing compound.

Clearly, while there is a difference shown in that patent between "using or not using the catalysts * * *," as the examiner stated, the other specific examples support the position of appellants: that a catalyst for the monofunctional reactants also catalyzes the reaction between polyfunctional reactants. We think that is the gist of the teaching of Rothrock with regard to catalysis.

[2] It is clear on this record that one of ordinary skill in this art would consider that functionality of the reactants determines whether the products are "monomeric"[6] or polymeric, but not that functionality would matter insofar as the reaction using the catalyst is concerned. The statement as to unpredictability of catalytic activity, while relevant, is so general as to afford little assistance in the determination of the precise issue before us. In fact, the more specific showings in the affidavit and the Rothrock patent indicate that one of ordinary skill in this art would expect that a catalyst for the particular functional groups involved in the reaction would operate relatively independently of the number of those groups on the reactant molecule. Thus we conclude that one of ordinary skill in the art would be satisfied from the facts shown in the affidavit that appellants had completed *the invention* as defined in the claims. See In re Fong, supra. Certainly appellants should not be required to submit facts under Rule 131 showing that they reduced to practice

5. While this patent was cited during the prosecution but not relied on for the rejection, the state of the prior art is not restricted to the documents relied on by the Patent Office. They must, however, be produced before the Patent Office. In re Cofer, 354 F.2d 664, 53 CCPA ——.

6. By "monomeric" we mean a product containing only one NHCOO—or urethane group, and do not use the word in the technically more narrow sense as applied to a vinyl group-containing compound in addition polymerization.

SEVEN-UP C(

hat which is obvious in
ose facts offered as sho
letion of the invention, :
oses of antedating a refer

For the foregoing reasons
f the board is reversed.

Reversed.

KEY NUMBER SYSTEM

CCPA

The SEVEN-UP COM.

v.

TROPICANA PRODUCT

Patent Appeal No. 7

United States Court of
and Patent Appea

March 3, 1966.

The Trademark Trial
Board of the United States P
ismissed application No. 41,
r a mark. The opponent ap
ourt of Customs and Pat
irkpatrick, J., held that
SUN-UP" for orange conc
preparation of uncarbon.
nk was not so confusin
marks "SEVEN-UP" or
rbonated beverage having
vor as to permit denial of
mark "SUN-UP".

Affirmed.

Martin, J., dissented.

rade Regulation ⇐188

The mark "SUN-UP"
ncentrate used in prepara
onated orange drink was

ited States Senior District
e Eastern District of Pennsyl
nated to participate in plac

which is obvious in addition to facts offered as showing a com- on of the invention, for the pur- s of antedating a reference.

or the foregoing reasons the decision he board is reversed.

versed.

The SEVEN-UP COMPANY
v.
ROPICANA PRODUCTS, INC.
Patent Appeal No. 7581.

nited States Court of Customs and Patent Appeals.

March 3, 1966.

he Trademark Trial and Appeal of the United States Patent Office ed application No. 41,066 to regis- ark. The opponent appealed. The of Customs and Patent Appeals, trick, J., held that the mark UP" for orange concentrate used paration of uncarbonated orange was not so confusingly similar "SEVEN-UP" or "7-UP" for ed beverage having a lemon-lime to permit denial of registration "SUN-UP".

rmed.

in, J., dissented.

Regulation ⊂=188

mark "SUN-UP" for orange te used in preparation of un- orange drink was not so con- fusingly similar to marks "SEVEN-UP" or "7-UP" for carbonated beverage having a lemon-lime flavor as to permit denial of registration of mark "SUN-UP". Lanham Trade-Mark Act, § 2, 15 U.S. C.A. § 1052.

2. Trade Regulation ⊂=182

The meaning of words in trademarks is often an important consideration in determining whether likelihood of confusion exists; where words have well known and understood, widely differing meanings, small difference in spelling or appearance may be sufficient to distinguish them and avoid finding of confusing similarity; on the other hand, with coined words which are meaningless so far as English language is concerned, slight variations in spelling or arrangement of letters are often insufficient to direct buyer's attention to distinction between marks. Lanham Trade-Mark Act, § 2, 15 U.S.C.A. § 1052.

Lewis S. Garner, Beverly W. Pattishall, Helen W. Nies, Chicago, Ill., for appellant.

C. Willard Hayes, Washington, D. C. (Cushman, Darby & Cushman, Washington, D. C., of counsel), for appellee.

Before RICH, Acting Chief Judge, and MARTIN, SMITH, and ALMOND, Judges, and Judge WILLIAM H. KIRKPATRICK.*

KIRKPATRICK, Judge.

[1] This is an appeal from the decision of the Trademark Trial and Appeal Board dismissing an opposition to Tropicana Products, Inc.'s application to register the mark "SUN-UP" for orange concentrate used in the preparation of uncarbonated orange drink. The product is sold mainly to dairies and distributed through dairy route men to householders

tates Senior District Judge for rn District of Pennsylvania, des- participate in place of Chief Judge Worley, pursuant to provisions of Section 294(d), Title 28, United States Code.

Application of Lester L. SPILLER.
Patent Appeal No. 9174.

United States Court of Customs and Patent Appeals.
Aug. 8, 1974.
Rehearing Denied Nov. 14, 1974.

Claims for process of using electrostatic forces to apply dry starch particles to wet paper web and for the resulting cellulosic material were rejected by the Patent Office Board of Appeals, Serial No. 607,418, and claimant appealed. The Court of Customs and Patent Appeals, Rich, J., held that claimant had sufficiently shown reduction to practice of the claimed invention prior to major reference relied upon by Board of Appeals; that only the claims which related to sheets of paper coated with various amounts of starch were obvious; and that claims were not indefinite.

Affirmed in part and reversed in part.

1. Patents ⇐90(5)

In determining whether differences between the claimed invention and facts shown by the references and affidavits in support of prior reduction to practice are so small as to render the claims obvious, court may consider not only the knowledge of one skilled in the art but also the teachings of other references available as of the date of the alleged reduction to practice. 35 U.S.C.A. § 103.

2. Patents ⇐91(3)

Affidavits offered to remove a reference must establish possession of the invention and not merely possession of what the reference happens to show if that is wholly outside what is being claimed. Patent Office Practice Rules, rule 131, 35 U.S.C.A. App.

3. Patents ⇐90(5)

For purposes of antedating reference by showing prior reduction to practice, it is sufficient that claimant show reduction to practice of his basic invention, which showing will also suffice as to claims differing therefrom only in details which are obvious to one of ordinary skill in the art. 35 U.S.C.A. §§ 102, 103, 112; Patent Office Practice Rules, rule 131, 35 U.S.C.A. App.

4. Patents ⇐91(4)

Claims relating to the use of electrostatic forces to apply dry starch particles to wet paper web in order to form cellulosic sheet material, such as paper, had been reduced to practice prior to application for patent cited as reference and were valid. Patent Office Practice Rules, rule 131, 35 U.S.C.A. App.

5. Patents ⇐90(5)

Possession of what is shown by affidavits to have been reduced to practice carries with it possession of variations and adaptations which would, at the same time, had been obvious to one skilled in the art. 35 U.S.C.A. §§ 102, 103, 112; Patent Office Practice Rules, rule 131, 35 U.S.C.A. App.

6. Patents ⇐18

Claims for process of electrostatic deposition of dry starch on a wet paper web were not obvious in view of prior references. 35 U.S.C.A. § 103.

7. Patents ⇐18

Claims, which recited sheets of paper coated with various amounts of starch with the majority of starch particles being separated from one another on the paper surface, were obvious in view of prior references. 35 U.S.C.A. § 103.

8. Patents ⇐101(5)

Statutory requirement of definiteness in claim for patent is essentially requirement for precision and definiteness of claim language so that claims make clear what subject matter they encompass and thus what the patent precludes others from doing. 35 U.S.C.A. § 112.

9. Patents ⇐101(8)

There is nothing indefinite in use of claim language which defines

ticular amounts accord
criterion. 35 U.S.C.A. §

10. Patents ⇐101(11)

Claim for process
with starch to modify
was not indefinite mer
ferred to coating "in a
to be capable of causing
cation of the surface
U.S.C.A. § 112.

Arnold G. Gulko, Arl
sler, Goldsmith, Clemen
Chicago, Ill., attorney
pellant; David H. B
Corporation, Indianapo
sel.

Joseph F. Nakamura
C., for the Commissi
Fred W. Sherling, Was
counsel.

Before MARKEY, Ch
LANE and MILLER,
MOND, Senior Judge.

RICH, Judge.

This appeal is from
the Patent Office Boar
hered to on reconsider
the rejection of claims
der 35 U.S.C. § 103,
claims 30–31 under 35
the rejection under 35
claims 1–2, 4–7, 9–11, a
plication serial No. 607
ary 5, 1967, for "Manu
and Similar Cellulosic M
ified Surface Property
Application of Dry Pow
the Water-Wet Web B
We reverse in part and

The Invent

The invention relates
re of cellulosic sheet
per which is coated w
ove its surface prope
ting of the paper is
trically grounding th
trostatically charging

ticular amounts according to functional criterion. 35 U.S.C.A. § 112.

10. Patents ⇐101(11)

Claim for process of coating paper with starch to modify surface properties was not indefinite merely because it referred to coating "in amounts sufficient to be capable of causing selective modification of the surface properties." 35 U.S.C.A. § 112.

Arnold G. Gulko, Arlington, Va., Dressler, Goldsmith, Clement & Gordon, Ltd., Chicago, Ill., attorney of record, for appellant; David H. Badger, Ransburg Corporation, Indianapolis, Ind., of counsel.

Joseph F. Nakamura, Washington, D. C., for the Commissioner of Patents. Fred W. Sherling, Washington, D. C., of counsel.

Before MARKEY, Chief Judge, RICH, LANE and MILLER, Judges, and ALMOND, Senior Judge.

RICH, Judge.

This appeal is from the decision of the Patent Office Board of Appeals, adhered to on reconsideration, affirming the rejection of claims 1–7 and 9–31 under 35 U.S.C. § 103, the rejection of claims 30–31 under 35 U.S.C. § 102, and the rejection under 35 U.S.C. § 112 of claims 1–2, 4–7, 9–11, and 19–23, of application serial No. 607,418, filed January 5, 1967, for "Manufacture of Paper and Similar Cellulosic Materials of Modified Surface Property by Electrostatic Application of Dry Powdered Starch to the Water-Wet Web Being Processed." We reverse in part and affirm in part.

The Invention

The invention relates to the manufacture of cellulosic sheet material such as paper which is coated with starch to improve its surface properties. Uniform coating of the paper is accomplished by electrically grounding the wet paper and electrostatically charging dry starch particles which are suspended in the atmosphere surrounding a water-wet web of paper, perhaps while the paper is still within a paper-making machine and on a Fourdrinier wire. This charge prevents the starch particles from contacting one another in the damp atmosphere near the wet web, and the electrostatic forces cause the starch to penetrate the air stream associated with the moving wet web and to gently attach themselves to the surface of the wet web.

The claims are numerous. The majority are directed to methods of manufacture of paper; claims 26–29 are allegedly directed to the resulting sheet of paper, 28 and 29 being specific to newsprint. Claims 30 and 31 are directed to the improvement in a conventional paper-making machine which comprises means for the electrostatic deposition of charged starch particles therein. Representative are claims 1, 26, 30, and 31.

1. A method of manufacturing a fibrous, absorbent, cellulosic sheet material, the steps comprising forming a water-wet web containing at least 25% by weight of water of fibrous cellulosic sheet material, depositing dry particles of starch upon said wet web by advancing said web past a particle deposition zone and supplying to said particle deposition zone said dry particles of starch electrostatically charged for mutual repulsion whereby said starch particles will be electrostatically attracted to and uniformly deposited upon said wet web in the form of separated particles and in amounts sufficient to be capable of causing selective modification of surface properties of the sheet material, and then dewatering said web.

26. A sheet of paper, said sheet having deposited on at least one side thereof starch particles in an amount of at least .02 pound of starch per 1000 square feet of surface, said starch particles being partially gelatinized in adherent association with the fibers on the surface of said paper and the majority of said starch par-

ticles being separated from one another on said paper.

30. In a paper-making machine the improvement which comprises means for advancing a wet paper web past a particle deposition zone, means for supplying to said particle deposition zone electrostatically charged particles of starch whereby such charged particles will be attracted to said paper web in the form of separate particles and uniformly deposited thereon.

31. Apparatus as recited in claim 30 in which said particle deposition zone is positioned above the free upper surface of the paper as it is carried by said advancing means constituted by a Fourdrinier wire.

The References and the Rejections

The references are:

Uong	2,030,483	Feb. 11, 1936
Read et al. (Read)	3,210,240	Oct. 5, 1965
Lichtenberger et al. (Lichtenberger) (Effective filing date Nov. 24, 1965)	3,461,032	Aug. 12, 1969
Smith et al. (Canadian) (Smith)	704,036	Feb. 16, 1965

Casey, Pulp and Paper, 2nd Ed., N. Y. Interscience, 1960, page 951.

Reif, "An Electrostatic Process for Applying Dry Coatings on Paper," TAPPI, October 1955, Volume 38, No. 10, pages 607–609.

The board having affirmed the rejection of claims and groups of claims on three different statutory bases, 35 U.S. C. §§ 102, 103, and 112, we shall deal with them individually.

The Rejections Applying Lichtenberger

A principal issue is whether appellant's affidavit showing under Rule 131 is sufficient to remove Lichtenberger as a reference. Appellant admitted explicitly at oral argument, and implicitly in his briefs here and before the board, that the various rejections under § 102 and § 103 which use Lichtenberger alone or in combination with other references were proper, and it was therefore essential to overcoming them that he remove Lichtenberger as a reference. Such rejections are applicable against all claims.

Lichtenberger is used as a reference in various ways. First, as against apparatus claims 30 and 31, which describe an improvement in a paper-making machine, Lichtenberger is applied alone under § 102, allegedly identically disclosing the invention. Secondly, Lichtenberger is applied alone under § 103 to claims 1, 2, 5, 9, 10, 11, and 19–23. Finally, all the other claims are rejected under § 103 in view of various combinations of Lichtenberger and other references, Lichtenberger and Smith to render obvious the invention of claims 3, 12, 13, 15–18, and 24–28, and additionally with Casey as to claims 4, 6, 7, 14, and 29. We have noted the various claims and the ways in which they were rejected on Lichtenberger alone, or in combination with other references, because of the differences which appear in this regard between this case and the prior Rule 131 cases in this court upon which the decision in this case is to rest.

The Rule 131 Evidence

The inventor Spiller's affidavit and evidentiary material submitted therewith, including laboratory notebook pages and accompanying affidavit of Spiller's associate, Stephen J. Smith, establish that Spiller and his associate performed certain acts which, in his view, establish a reduction to practice of the claimed invention prior to the earliest effective filing date of Lichtenberger, November 24, 1965. Grounded wet TAPPI [1] blotting paper was moved over a fluid bed of powdered starch electrostatically charged to a level of 20–40 kilovolts. The starch was electrostatically propelled into contact with and adherently deposited on the surface of the wet paper, which had been pretreated with a solution of potassium iodide and iodine to color the deposited starch particles

1. TAPPI is the acronym of the Technical Association of the Pulp and Paper Industry.

that they could be seen and the uniformity of the deposit thus observed. The paper sheet was oven dried and weighed prior to deposit of the starch and the wet paper with the starch deposit thereon was dried after the deposition to gelatinize the wet starch on the wet paper and redry the paper for subsequent weighing to determine the amount of starch deposited on the paper. The Smith notebook pages establish the various weight amounts of starch deposited on the paper at various voltages of electrostatic charge. Smith notes, "Works very well & can put as much on as we want." And also, "The higher the voltage the better the coverage."

Also in evidence is a short letter to appellant from L. S. Simser of August 12, 1965, who represented Penick & Ford Limited, of Cedar Rapids, Iowa, the company which supplied the starch and TAPPI blotting paper to appellant, and a portion of a letter from appellant's patent counsel, A. G. Gulko, dated October 14, 1965, which discusses appellant's invention. The latter apparently reported the results of a prior art search made on the invention (report not of record) and states Mr. Gulko's view of the invention as follows:

> As I understand the present development, finely divided soluble starch powder is deposited by means of electrostatic forces from a fluid bed onto the surface of wet paper. The fluid bed underlies the wet paper as it goes through the paper-making process where the wet paper contains between about 40% to 70% by weight of water.

Spiller's affidavit refers to the Gulko letter as helping to record the details of the "demonstration" relied upon for a reduction to practice. While various other facts shown by the affidavits or the Smith notebook pages will be discussed later, we will start from the proposition that appellant's affidavits and evidence establish electrostatic coating of dry starch particles on re-wet TAPPI blotting paper.

The Opinion of the Board

The opinion of the board and the Examiner's Answer, with which the board agreed, list and discuss various *elements* of the thirty claims which are believed not to have been established by the affidavit showing. The examiner stated, in pertinent part (emphasis ours):

> The affidavits and exhibits do not show the *amounts* of claims 3, 12–18 and 24–29, nor the *water contents* of claims 1–25. There is no showing of any *apparatus* remotely like that of claims 30 and 31. There has been no allegation or showing that the starch was applied to a web containing *at least 25% moisture*. The affidavits and exhibits do not show a process or apparatus such as that *claimed*. Thus the affidavit fails to prove the *heart of the claimed invention*, ie, application of particles to a wet web. The affidavits do not prove that the process was done in conjunction with a papermaking machine nor that the apparatus was part of a papermaking machine.

The board added the following criticism of its own:

> There is no clear evidence of record that Appellant's technique employing wet TAPPI blotting paper is an industry-*recognized* test duplicative of wet web on a Fourdrinier wire. The notebook exhibits, describing work done some 4½ years prior to the affidavits, do not make it apparent that the starch deposited from a fluidized bed was *dry*, or that the paper was *wet*, or that there was any dewatering step, or indeed that the starch particles were "electrostatically charged for mutual repulsion" and "separated from one another," all as required by the claims. Nor is any ratio of starch to paper surface indicated, or any surface property mentioned which might have been modified by the treatment. In connection with the rejections of claims 17, 18, 25, 28, 29 and 31, note that the Rule 131 showing concerns

only depositing starch *underneath* the paper. Lichtenberger et al. stands as a valid reference.

And, in addition, the board incorporated in its opinion by reference the following portion of an opinion by another panel of the Board of Appeals in a copending application [2] of appellant where the merits of the same Rule 131 evidence were discussed:

> Considering the merits of the Rule 131 evidence, affiant Spiller, in his affidavit executed January 13, 1970, states that "TAPPI blotting paper, when wet, duplicates the condition of wet paper on a Fourdrinier machine." There is nothing to correlate this 1970 observation with the data recorded in the Smith notebook bearing dates in August and September 1965. The fragment of a letter appearing on the letterhead of Arnold G. Gulko refers to applying starch powder to "the wet paper as it goes through the paper-making process where the wet paper contains between about 40% to 70% by weight of water." Again there is no correlation between this observation and the Smith notebook entries. It would appear that appellant is attempting to create the illusion that the Smith laboratory work had something to do with the electrostatic deposition of dry starch in a wet web of paper on a paper-making machine, which concept is totally lacking in the Smith notebook entries but fully disclosed in Lichtenberger et al.
>
> At best, it would appear that Smith "shot" starch from a fluidized bed onto pieces of blotting paper of unspecified dimension and of unspecified, if any, water content. Such pieces of blotting paper hardly qualify as a "water-wet web" as required by the claims on appeal and as disclosed in Lichtenberger et al. Certainly if the water content of the blotting paper was of significance with respect to starch deposition, this circumstance was unobserved by Smith. The Spiller affidavit states that "Both visual observation and microscopic observation demonstrated that the deposit was at the surface and uniform" but there is no evidence in this record concerning who made such observations or when they were made. There is nothing in the Smith notebook which indicates that any of the samples prepared by Smith were inspected.

Appellant's Arguments

On the sufficiency of the affidavit showing, appellant's brief individually attacks each reason given by the examiner and both boards as to why the showing made by appellant does not satisfy each limitation of the claims. For example, in answer to the specific allegation that the acts established by the affidavit showing do not include the use of a water-wet web containing at least 25% moisture, which is a limitation of all method claims 1–7 and 9–25, appellant states that "the mere characterization of paper as 'wet' [which is what is established by the Spiller affidavit and Smith notebook] roughly indicates at least this amount of water." In addition, appellant maintains that the quoted portion of the contemporary letter from counsel "indicates that the work done was estimated to have been done [with] paper wet with: '. . . between about 40% to 70% by weight of water." With respect to the board's comment that the failure of the affidavit showing to establish "any ratio of starch to paper surface," called for by many dependent claims, appellant notes only that many of the claims (1, 2, 4–11, 19–23, 30, 31) do not specify the ratio of starch to paper surface. And as to the board's criticism of the appropriateness

2. Application of Lester L. Spiller, serial No. 607,511, for "Manufacture of Paper and Similar Cellulosic Materials of Modified Surface Property by Electrostatic Application of Dry Powdered Water-Sensitive Re... the Water-Wet Web Being Proce... board opinion of April 30, 1971.

TAPPI blotting paper as representative of the condition of the wet web of paper on the Fourdrinier paper-making machine, appellant notes that Spiller's affidavit specifically alleges that "TAPPI blotting paper, when wet, duplicates the condition of wet paper on a Fourdrinier machine." Appellant further states that blotting paper is merely a web of uncompacted paper fibers so that when it is wet it is then a water-wet web, and, accordingly, the only difference between it and the web on a paper-making machine is perhaps that the latter is continuous, and the blotting paper is of a specific length.

The Prior Cases

The problem with the characterization of the Rule 131 sufficiency issue by the examiner and the two boards is that it is nowhere stated just what appellant must show in order to antedate Lichtenberger. The examiner first stated that "The affidavits and exhibits do not show a process or apparatus such as that claimed," thus implying that it is necessary to show a reduction to practice of the invention as it is claimed, presumably in each and every claim. Then the examiner states that, "Thus the affidavit fails to prove the *heart of the claimed invention*, ie, application of particles to a wet web." (Emphasis ours.) But what is the "heart" of the claimed invention, and how is it to be determined when there are many different claims?

As noted earlier, appellant's brief attempts to refute each factual statement of the examiner and the board panels, but, like them, never cites any standard for what must be shown to antedate Lichtenberger, in relation either to what Lichtenberger shows or to what is claimed. The solicitor's brief, for the first time in the prosecution of this application, states what he believes the decisions of this court suggest a patent applicant must show to antedate a reference, saying:

> It is submitted that appellant has failed to show "priority with respect to so much of the claimed invention as the reference happens to show." In re Stempel, 241 F.2d 755, 44 CCPA 820 [1957]. Also, appellant has failed to show prior "possession of either the *whole* invention claimed or something falling *within* the claim, in the sense that the claim as a whole reads on it." In re Tanczyn, 347 F.2d 830, 52 CCPA 1630 [1965].

Stempel and *Tanczyn* at least lay a foundation for determining the sufficiency of the Rule 131 showing, but how are the two quoted statements applicable to the situation here? If what the reference shows is the important factor, no one has delineated what this is and whether the Rule 131 affidavits show it, particularly since the "claimed invention" varies with the individual claims. If apparatus claims 30 and 31, referring to "a paper-making machine," represent the claimed invention, then, at least according to the admittedly correct examiner's rejection of these claims, the reference shows the invention. If, however, the invention is taken to be what is claimed in the method claims, Lichtenberger may not specifically show the invention but may render it obvious, at least according to the § 103 rejections made in view of Lichtenberger alone, or in view of one or more other references.

Taking what the affidavits and other evidence show as having been performed, again great variances exist for individual claims. Asking whether claims 30 and 31, in the words of *Tanczyn*, "read on" what appellant did prior to the effective date of the reference, might require a negative response because of the fact that appellant's demonstration used no Fourdrinier paper-making machine. In this sense, appellant shows less than what the reference shows. Using method claim 1, supra, as representative of the invention, however, the answer to the question whether this claim "reads on" appellant's prior activities may depend on whether it is estab-

lished that appellant's paper contained "at least 25% by weight of water."

Resolution of the question of the sufficiency of the Rule 131 showing resides, at least in part, in decisions of this court after *Tanczyn*, not cited by either party, which dealt with fact situations where the showing made by Rule 131 affidavits was less that the invention *claimed* but was held sufficient to remove the cited reference because the differences were obvious. In re Hostettler, 356 F.2d 562, 53 CCPA 1069 (1966); and In re Stryker, 435 F.2d 1340, 58 CCPA 797 (1971).

In *Stryker*, we determined the sufficiency of a Rule 131 showing which established all of the *claimed* invention *except* for specific weight percentage limitations. We noted that appellant's showing was commensurate with that of a Harban reference, which had been solely relied upon by the Patent Office to render the claimed invention obvious, and that it was the specific weight percentages which appellant's affidavit evidence failed to establish which were considered by the Patent Office to be obvious in view of the reference. We noted that the "differences between the claimed invention and the reference disclosure [as well as appellant's Rule 131 showing] are so small as to render the claims obvious over the reference [and over appellant's showing]," and held the showing sufficient to antedate the reference. The board in *Stryker*, like the examiner here, had stated the proposition, for which *Tanczyn* was cited, that "The *claimed* invention must be shown in the affidavit, i. e., the [weight percentage limitations]." We held that this was not necessary, saying:

> To hold that Harban is not removed by the showing here presented would lead to an anomalous result, i. e., if appellant broadened his claims by deleting the weight limitations, so as to read literally on Harban, Harban would not be available as a reference against such broadened claims because appellant's antedating affidavit would be satisfactory in every respect. It cannot be the law that the same affidavit is insufficient to remove the same reference applied against the slightly narrower claims presented here. [Footnote omitted.]

The situation here with respect to the invention of, for example, claim 1, is much like that in *Stryker*. The original rejection by the Patent Office was for obviousness over a single reference, Lichtenberger. Appellant's showing seems to be commensurate with the showing of the reference, but, as noted by the examiner and by the board in the related application, neither expressly shows the limitation of the claim that the wet web contains "at least 25% by weight of water."[3] This is like the reference disclosure and affidavit showing in *Stryker* which failed to show the weight percentage limitations of Stryker's claims.

[1, 2] Many dependent claims also raise the question whether the situation in *Stryker*, where the differences between the claimed invention and what the reference and affidavits showed were "so small as to render the claims obvious" to one skilled in the art in view of a single reference, ought to be extended to a situation where part or all of the differences are rendered obvious, not merely by the knowledge of one

3. Lichtenberger's web, like that in appellant's showing, is taught to be wet; and both *may in fact* contain the minimum quantity of water claimed. Lichtenberger does not specifically teach this, however, and we do not find that the water quantity has been established by appellant's evidence. There is nothing in the Gulko letter to tie the water percentage figure mentioned to the *demonstrations* relied upon for reduction to practice. The water percentage figure could just as well have come from appellant's conception of the invention as from the demonstrations. However, we do think appellant established that his web was "wet" during the demonstrations. Appellant's blotting paper web is clearly shown by the Smith notebook to have been electrically "grounded," and a starch indicator (potassium iodide and iodine solution) was used thereon.

skilled in the art but
available as of the da
duction to practice.
cently answered that
firmative, at least w
reference is involved
396 F.2d 1234 (CCP/
no reason to distin
where two other re
As we noted in *Da*
—or the references—
show what one skille
be expected to know
the reference which
The only additional
to be added is that th
must still establish p
vention and not just
happens to show if t
side" what is being c
czyn, supra.

[3] The inventi
claims 30 and 31 r
difference between th
uation in *Stryker*. I
that "the differences
small as to render t
over the reference,"
131 showing was com
reference. Here, taki
and embodiment of cl
pellant's showing ma
invention as there cl
it does not appear t
sion of all the limitati
since appellant's dem
include the use of his
sition technique on a
making machine. The
whether the rule of *S*
extended to a situatio
131 showing is not f
with the reference
claimed invention ob
Stryker is controlling
as well, and that such
Stryker is supported b
sion in *Hostettler*, supr

In *Hostettler*, we cor
iency of a Rule 131 sh
itions similar to the

skilled in the art but by *other references* available as of the date of the alleged reduction to practice. This court has recently answered that question in the affirmative, at least when a single other reference is involved, in In re Dardick, 396 F.2d 1234 (CCPA 1974), and we see no reason to distinguish the situation where two other references are used. As we noted in *Dardick*, the reference —or the references—are merely used to show what one skilled in the art would be expected to know as of the date of the reference which has been removed. The only additional caveat which ought to be added is that the affidavit showing must still establish possession *of the invention* and not just of what a reference happens to show if this is "wholly outside" what is being claimed. In re Tanczyn, supra.

[3] The invention embodied in claims 30 and 31 raises an additional difference between this case and the situation in *Stryker*. In *Stryker*, we said that "the differences . . . are so small as to render the claims obvious over the reference," and Stryker's Rule 131 showing was commensurate with the reference. Here, taking as the invention and embodiment of claims 30 and 31, appellant's showing may well render the invention as there claimed obvious, but it does not appear to establish possession of all the limitations of these claims since appellant's demonstration did not include the use of his electrostatic deposition technique on a Fourdrinier papermaking machine. The question, then, is whether the rule of *Stryker* ought to be extended to a situation where the Rule 131 showing is not fully commensurate with the reference but renders the claimed invention obvious. We think *Stryker* is controlling in this situation as well, and that such an extension of *Stryker* is supported by our earlier decision in *Hostettler*, supra.

In *Hostettler*, we considered the sufficiency of a Rule 131 showing under conditions similar to the present situation as it relates to claims 30 and 31. The invention was a catalytic process for producing urethane. The reference, which admittedly anticipated the invention, showed the claimed process as producing *poly*urethane, while the Rule 131 showing established the use of the catalyst only to produce a *monomeric* urethane compound. Our opinion characterized the invention as "the use of a catalyst in a process involving an old reaction" and held the showing sufficient, although relating to an embodiment of the invention *different* from that shown by the reference. Using a prior art Rothrock patent, cited during the prosecution, as indicative of the knowledge of one in the art, we concluded that "one of ordinary skill in the art would be satisfied from the facts shown in the affidavit that appellants had completed the invention as defined in the claims." We stated:

> It is clear on this record that one of ordinary skill in this art would consider that functionality of the reactants determines whether the products are "monomeric" or polymeric, but not that functionality would matter insofar as the reaction using the catalyst is concerned. The statement as to unpredictability of catalytic activity [by the examiner], while relevant, is so general as to afford little assistance in the determination of the precise issue before us. In fact, the more specific showings in the affidavit and the Rothrock patent indicate that one of ordinary skill in this art would expect that a catalyst for the particular functional groups involved in the reaction would operate relatively independently of the number of those groups on the reactant molecule. Thus we conclude that one of ordinary skill in the art would be satisfied from the facts shown in the affidavit that appellants had completed *the invention* as defined in the claims. See In re Fong, supra [288 F.2d 932, 48 C.C.P.A. 897 (1960)]. Certainly appellants should not be required to submit facts under

Rule 131 showing that they reduced to practice that which is obvious in addition to those facts offered as showing a completion of the invention, for the purposes of antedating a reference. [Footnote omitted.]

The *Fong* case cited in the above quotation is significant here. We believe that similar considerations govern our decision and that, for the purpose of antedating the Lichtenberger reference under Rule 131, it is sufficient that appellant has shown a reduction to practice of his basic invention, which showing will also suffice as to claims differing therefrom only in details which are obvious to one of ordinary skill in the art.

[4] The heart of this invention is clearly the use of *electrostatic forces* to apply *dry starch* particles to a *wet paper web*. The differences which exist between the claimed invention and the specific reduction to practice established by the Rule 131 showing are such as would be obvious to one of ordinary skill in this art. In re Stryker, supra; In re Dardick, supra; In re Hostettler, supra; In re Fong, supra.

We are satisfied that the differences in the embodiments called for by the claims are so small that the claimed invention would have been obvious. Taking the claims in numerical order, claim 1, and the claims dependent thereon, call for a moisture content of "at least 25% by weight of water" in the web. While we are not satisfied that the Rule 131 showing establishes this content *in the reduction to practice*,[4] we are satisfied that, at the least, one skilled in this art would find it obvious to have an admittedly "wet" web contain such an amount of moisture and that wet blotting paper would be considered to be a "water wet web."

With respect to limitations of the claims which require specific ratios of starch to paper surface and the modification of surface properties by the deposition of starch on the paper, we are satisfied that these limitations too would be obvious to one skilled in the art familiar with the facts shown by the Spiller affidavit and the Smith notebook entries. Certainly it was well known that starch modified the surface properties of paper generally. It was no part of applicant's invention to apply starch to paper. He merely applied it by a new technique. The fact that *several* different weights of starch were applied to the paper by various numbers of passes and with various values of voltage would render the deposition of specific amounts which are claimed obvious.

[5] With respect to the deposition of starch on both sides of the paper, called for by claims 17, 18, 28, 29 and 31, which the board found unsupported by the Rule 131 showing of "only depositing starch *undercath* the paper," this and the other differences called for by the claims over what was reduced to practice would clearly be obvious to one of ordinary skill in this art.[5]

The differences between the Rule 131 showing and the invention as it is described in claims 30 and 31, which call for using the electrostatic starch deposition technique in a paper-making machine and on the Fourdrinier wire thereof, are also obvious differences. While appellant's argument, and consequently the Patent Office response thereto, centered on the equivalence or duplication of the conditions of the wet paper on the Fourdrinier machine by the use of the TAPPI blotting paper, we think that the obviousness of the use of the technique on the paper-making machine, as claimed, is clear. Spiller's affidavit states that

4. See note 3, supra.

5. Since the purpose of the Rule 131 showing is to establish broadly possession of the invention, In re Tanczyn, supra, it is proper to consider the obviousness *of the differences* between what is shown and what is claimed because possession of what is shown carries with it possession of variations and adaptations which would, at the same time, be obvious to one skilled in the art.

"TAPPI blotting paper, when wet, duplicates the condition of wet paper on a Fourdrinier machine," and the contemporaneous letter of Simser made reference to the use of electrostatic coating "in the paper industry." If there is any doubt as to the knowledge of one skilled in the art, it is clear from the Uong reference that the art had long known of depositing dry coatings directly upon the water-wet paper web on the Fourdrinier wire in a paper-making machine.

Accordingly, the rejections under § 102 and § 103 in view of Lichtenberger and Lichtenberger in combination with other references are reversed.

The Prior Art Rejections Exclusive of Lichtenberger

[6] We have studied the five references variously applied by the Patent Office under § 103 and have concluded that they do not render obvious the *electrostatic* deposition of dry starch on a wet paper web. The only reference which deals with electrostatic coating is Reif, which discloses coating finely divided powders on a dry paper web. The solicitor notes correctly that "Reif does not [explicitly] disclose whether the paper being coated is wet or dry." However, it is quite clear from the Reif disclosure that the paper is not at all wet. Reif states:

> Web speed probably will be limited only by the rate at which the electrical charge can leak off the powder deposited on the web. The electrical charges must drain off the coated web before leaving the strong electrostatic field. Otherwise, repulsion of the like charges on the web and coating powder may cause disturbances in the coating that will mar the appearance of the finished paper.
>
> Once the coating is deposited on the paper and leaves the coating unit, it is fixed to the paper with heat. This fusing is done as the web passes through an infrared oven or over a heated roll. Had the paper been wet, there would be no need to drain the charge off the coated web to avoid disturbances in the coating before the application of heat to fix the coating to the paper. Moreover, we cannot accept the argument of the solicitor that "dry paper contains a substantial amount of moisture" as a teaching that the paper may be wet.

In addition, we can find no reason why it would be obvious to one skilled in the art to combine the Reif teachings of using electrostatic forces in paper coating with the teachings of the other references, which suggest coating paper with starch in either wet or dry form. The wet application of starch is shown by Read, Smith, and Casey and electrostatic forces would be useless in combination therewith. Uong does teach the application of powdered coating materials to the wet web of paper in a paper-making machine, but we do not believe that it would have been obvious to one of ordinary skill in the art to combine electrostatic force therewith. We agree with appellant that the use of starch particles in the Uong enclosure above the wet web would probably result in the formation of starch agglomerates and make the process inoperable. The solicitor's answer (to appellant's assertion) that "it would be all the more obvious to electrostatically charge the particles as taught by Reif since the well-known advantage of electrostatic coating is the prevention of agglomeration" is a hindsight application of appellant's teachings. Reif does not teach such an advantage and, using a dry insulated sheet and not starch, never had such a problem to overcome.

Accordingly, the rejections under 35 U.S.C. § 103 of claims 1–7, 9–25, and 30–31 are reversed.

[7] As to the four claims 26–29, which recite sheets of paper coated with various amounts of starch with "the majority of said starch particles being separated from one another on said" paper surface, we agree with the solicitor that "appellant has failed to show that the product is unobviously different from that of Read or Smith." These claims are not limited to the starch coated pa-

per produced through electrostatic coating of wet paper, and we do not believe that they have been shown to sufficiently distinguish over the art by the properties of the starch on the paper and such limitations as that above-quoted. The rejections of claims 26–29 under § 103 are affirmed.

Section 112, Indefiniteness

The board affirmed the rejection of claims 1, 2, 4–7, 9–11, and 19–23 under the second paragraph of § 112 for the reasons given by the examiner, which are:

> Applicant has failed to recite the amount of starch applied to the web in quantitative terms or in definite qualitative terms. Applicant relies on the phrase "in amounts sufficient to be capable of causing selective modification of surface properties". It is not even clear whether the modification will improve the properties or what properties will be modified. These properties could range from pick resistance, smoothness, sizing, wet strength, color to the taste. Furthermore, it is not clear whether applicants' claims are meant to include the application of two or three particles, because two or three particles would selectively modify the surface properties. Likewise a coating of starch one inch thick on the surface of the web would also modify the surface.

[8, 9] We recently restated what is meant by the "indefiniteness" requirement of § 112. It is essentially a requirement for *precision and definiteness* of claim language so that the claims make clear what subject matter they encompass and thus what the patent precludes others from doing. In re Conley, 490 F.2d 972 (CCPA 1974). Taking the requirement as such, we find that there is no indefiniteness in the use of the above-quoted language in the rejected claims. There is nothing indefinite in the use of claim language which defines particular amounts according to a functional criterion. See In re Fuetterer, 319 F.2d 259, 50 CCPA 1453 (1963); In re Swinehart, 439 F.2d 210, 58 CCPA 1027 (1971).

[10] The examiner's statement that "It is not even clear whether the modification will improve the properties," and his extreme example that "a coating of starch one inch thick on the surface of the web would also modify the surface" almost suggest that there is something sinister in appellant's claiming something which would not, *in the examiner's view*, "improve" the properties of the paper coated. As far as the rejection of the claim language for idefiniteness is concerned, we think that the claims make it clear, through the use of the word "selective," that any modification of surface properties is subjectively desirable in the particular coating applied. Even a "selective" modification of surface properties through the application of an inch of starch to the coated paper —absurd though that would be—would be within the language of the claims. Thus the claim language makes clear what subject matter they encompass.

In In re Conley, supra, we dealt with, and reversed, a similar rejection of claims as indefinite for failure to recite specific proportions and amounts of certain ingredients, one of which was the proportion of satin white in an aqueous suspension. Appellants in *Conley* maintained that there were "no critical proportions of satin white in aqueous suspension." We note that here also there is no criticality in the amount of starch which is to "be electrostatically attracted to and uniformly deposited upon" the wet web, and we agree with appellant that there is no reason why he must state in his claims "a feature of no importance" to his invention, which, as previously noted, is the electrostatic deposition of dry starch on wet paper. As appellant's brief points out, the original reduction to practice of the invention which appears from the Rule 131 affid

vit evidence, shows that from the very beginning it was determined by appellant's associate that, with respect to the amount of starch deposited, we "can put on as much as we want." And appellant's specification states that:

> In practicing the present invention, the amount of starch applied can be varied considerably while still achieving some of the benefits of the invention.

Accordingly, we find no indefiniteness in defining the amount of starch. The rejection of claims 1, 2, 4–7, 9–11, and 19–23 for indefiniteness is reversed.

Summary

In accordance with the foregoing, the rejections of claims 1–7, 8–25, and 30–31 are reversed, and the rejection of claims 26–29 under § 103 is affirmed.

Modified.